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Evidence-based Practice Gap in Knowledge

Margaret M. Orn

Submitted as Partial Fulfillment for the Doctor of Nursing Practice Degree

Regis University

April 9, 2012

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Executive Summary

Evidence-based Practice Gap in Knowledge

Problem

Evidence-based practice (EBP) has been shown to affect quality, safety, and decrease costs to organizations (Cullen, Titler, & Rempel, 2010). Until recently, diploma and associate nursing curriculums have failed to include education on the principles of EBP. Health care facilities are developing standards that require nurses to provide care based on evidence. Approximately 63.4% of nurses at the study agency hold an associate degree level of education in nursing. The population, intervention, comparison, and outcome (PICO) for this project was: In nurses prepared with an Associate Degree in nursing (ADN), does education in EBP increase knowledge, skills (implementation), and attitudes (beliefs) regarding EBP?

Purpose

The purpose of this capstone project was to investigate a change in ADN nurses' knowledge, skills and attitudes after participation in an EBP educational intervention.

Goal

The outcomes research project goal was to study the change in nurses' attitudes toward and implementation of EBP by increasing knowledge.

Objective

One project objective was to describe the demographics of the random sample and assess for any significant correlations. Another objective was to demonstrate an improvement in EBP beliefs and implementation skills through pre- and post- EBP educational intervention surveys of the ADN nurses. A follow-up survey four weeks after the educational intervention was administered to discover if knowledge, skills, and attitude gains were sustained.

Plan

The project began with a systematic literature review that provided an assessment of the current state of EBP education in nursing. An instrument was selected and permission obtained to assess nurses' attitudes and implementation skills using the EBP beliefs (EBPB) and implementation scales (EBPI). EBP education was designed and four classes scheduled. Participants were randomly selected from a compiled list of ADN graduates in the agency. After IRB approval through Regis University and Harrison Medical Center, the education was implemented with online data collected to analyze for study objectives.

Outcomes and Results

A total of 38 nurses (79% ADN graduates) attended the EBP class with 37 completing the pre-intervention and post-intervention online survey. Additionally, 29 (90% ADN) nurses took the online survey four weeks later. Participants registered higher scores in both their beliefs and implementation skills after the educational intervention. There four weeks' post-intervention belief scores remained higher than there pre-intervention scores. Statistically significant differences in EBPB scores ($p = 0.019$) were determined using *t* tests that compared aggregate means between the pre-intervention and post-intervention scores. Additional statistically significant differences in means were found for the ADN stratified group between the pre-intervention and four weeks post- intervention scores of the EBPB scale ($p = 0.02$).

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Evidence-based Practice Gap in Knowledge

Many nurses go into health care with a passion to help people. That passion drives their desire to provide the best possible care for their patients. Research is demonstrating how the use of evidence can make a difference in patient outcomes and satisfaction (Cullen, Titler, & Rempel, 2010). Yet, many nurses do not understand the concept of using evidence in their practice due to a lack of education.

The purpose of this capstone project was to describe how nurses educated at the Associate Degree nurse (ADN) level are affected by a lack of knowledge in the principles of evidence-based practice (EBP) and to present an educational intervention to address this issue. The aim of the study was to determine if improving ADN graduate nurses' knowledge will increase use of EBP. The project was designed using a market and risk analysis to establish value and feasibility. A mission and vision along with goals and objectives set the direction and kept the project focused. An evaluation plan was used to describe the desired outcome and how a change in beliefs and implementation skills could be demonstrated. The selection process for participants began on November 8, 2011 with the implementation of the educational intervention the first week in December, 2011 (see Appendix A for timeline).

Problem Recognition and Definition

EBP has been shown to affect quality, safety, and to decrease costs to the organization (Cullen, Titler, & Rempel, 2010). The Institute of Medicine (as cited in Chiu, et. al., 2010) established EBP as a core competency for health care professionals. The medical center where the project was implemented has set annual and strategic goals to meet several EBP benchmarks. There are a number of hospital and nursing procedures along with committee charters that refer

to nurses providing care based on evidence (Harrison, 2011). Compliance with these procedures is in question as revealed with spot audits by nursing leaders. They found nurses are choosing to do what they have always done instead of following the evidence provided in the procedure (the agencies Nurse Practice Committee, personal communication, June 14, 2011).

Professional nursing has several entry levels of education including ADN, Diploma, and Bachelor of Science Degree in Nursing (BSN). Until recently, Diploma and ADN curriculums have failed to include education on the principles of EBP. The American Association of Colleges of Nursing (2008) designates EBP as a key component of professional education in the Baccalaureate program. At the study agency approximately 63.4% of nurses are ADN graduates who are not likely to have a good understanding of the principles of EBP even though there is an expectation it will be used in providing care.

PICO

The population, intervention, comparison, and outcome (PICO) question for this project was: In ADN graduate nurses, does education in EBP increase knowledge, skills (implementation) and attitudes (beliefs) regarding EBP? The premise is that if ADN graduates are provided education on what EBP is, why it is important, online database search strategies, and provided coaching opportunities to analyze research, will their self-reported beliefs and implementation scores improve?

Significance, Scope, and Rationale

The clinical significance of this project is to improve patient outcomes and satisfaction using the best evidence. The scope of the project is to provide an educational intervention in the form of a class on EBP principles to a sample of ADN graduates and measure a change in their

self-reported beliefs and implementation skills. The rationale is that if nurses are educated in principles of EBP, they will choose to use these skills and see positive results in their patient care. Understanding the effect education has on these nurses will add additional scientific knowledge related to reducing or mitigating the lack of education as a barrier to implementation of EBP and subsequently increase the use of EBP.

Theoretical Foundation

The outcomes research project was modeled after the Rosswurm and Larrabee (1999) model for change to EBP. The first step of this model is to assess for gaps in knowledge. The assessment began by reviewing the literature and interviewing staff and leaders at the agency. The results of this assessment were used to build the EBP curriculum incorporating research to develop the education using adult learning principles. A periodic knowledge check was used throughout the class to reinforce the education. The practice change associated with the model is that when nurses become knowledgeable about EBP principles they will apply what they have learned about EBP at the bedside. The reassessment stage will include two repeat surveys; one conducted immediately after the educational session and one four weeks later. Ongoing Journal Clubs will reinforce participants' skills in appraisal of the literature and assist in integration of evidence at the bedside (see Appendix B).

Literature Selection

A review of the literature began by using CINAHL, Medline, Academic Search Premier, and the Cochrane Library online databases. Using evidence-based practice as a keyword, along with narrowing the dates of the articles to the last ten years, and setting the language to English, 19,191 articles were discovered. The PICO and other keywords were added to streamline the

search process using words such as nurse, hospital, theory, instrument and associate degree nurse to collect evidence (see Appendix C for evidence table).

Scope of the Evidence

The scope of the evidence included descriptive correlation and cross-sectional studies, quasi-experimental designs, and Cochrane reviews. EBP evidence was pursued for its history, importance, theories, educational interventions, and barriers. Evidence was selected for its relevance to the PICO using descriptive studies to describe the history of EBP and to discover how EBP is lacking in the ADN curricula. There were a couple of articles deemed optional for use in practice. The rest of the articles met the "recommended for use in practice level" of evidence (Houser & Oman, 2011).

Review of Evidence

Background

EBP can be traced back to Florence Nightingale as she identified patterns and began writing down her observations. It wasn't until sufficient cause and effect research studies were conducted that health care began to use existing evidence to base practice decisions. Dr. Archie Cochrane, in1972, challenged the medical profession to use the results of randomized controlled studies and their outcomes to inform practice. In 1998 the first EBP journal was published increasing the dissemination of EBP information (Foxcroft, & Cole, 2009).

The literature refers to the practice of nursing as based on tradition that is passed on by peers (Bliss-Holtz, 2007; Cadmus, Van Wynen, Chamberlain, Steingall, Kilgallen, Holly, and Gallagher-Ford, 2008). On average, it takes 17 years for evidence to be incorporated into bedside care (Fineout-Overholt, Mazurek, & Schultz, 2005). The American Nurses Credentialing Center,

(2011) Magnet® Recognition Program is encouraging health care facilities to strive for this recognition that requires the utilization of research (Munroe, Duffy, & Fisher, 2008). Nurses tend to believe in and are ready to learn about EBP but have limited opportunities to do so (Chiu, et al., 2010; Cadmus, et al., 2008). BSN nursing programs have traditionally included a class in research that introduces the concepts. ADN programs were developed to fill a critical need for nurses after World War II. Traditionally, these, along with diploma programs, have focused on producing competent technical nurses and have not included the use of research in their curricula (Matthias, 2010). In the United States there are fewer baccalaureate prepared nurses than associate level and diploma nurses and even fewer nurses with graduate degrees (Pravikoff, Tanner, & Pierce, 2005).

Systematic Review of the Literature

A nationwide study showed most nurses do not feel comfortable with EBP (Pravikoff, Tanner, &Pierce, 2005).When nurses take part in education about EBP and their knowledge of EBP improves, they choose to use the best evidence in the care of patients (Varnell, Haas, Duke, &Hudson, 2007; Koehn and Lehmen, 2008; Fineout-Overholt, et al, 2005). In addition to increasing knowledge and skills, a culture change must be facilitated if EBP is to be translated into practice (Reavy & Tavernier, 2008; Fineout-Overholt, et al., 2005).

There are many barriers to the utilization of EBP which include nurses' unaware of evidence that can be used to improve patient outcomes. Several research studies have shown nurses have a lack of EBP knowledge along with insufficient resources to help transform evidence to practice (Chiu, et al, 2010; Varnell, et al, 2007; Cadmus, et al., 2008). ADN graduate nurses receive very little, if any, education explaining how to conduct database searches, use of

EBP tools, and evaluation of research findings. Additional barriers to EBP use in patient-care settings include a lack of time due to heavy patient loads and deficient library resources (Melnyk, Fineout-Overholt, & Mays, 2009; Varnell, et al, 2007).

To augment the use of EBP nurses need education, leadership, and support (Adams, 2009; Fineout-Overholt, et al., 2005). Interventions have included education that involved the rationale why EBP matters, how to formulate a clinical question, how to perform library searches, how to critically appraise literature, and how to mentor and provide support of projects (Kim, Holtom, and Vigen, 2011); Melnyk, et al., 2009). Many health care facilities have tried establishing research councils, committees, and consortiums to share education, improve the use of EBP, and encourage a generation of new research (Foxcroft, & Cole, 2009). None of these studies showed convincing evidence that EBP increased. Other successful interventions for encouraging EBP include journal clubs to practice critically analyzing the research, awards for a successful EBP project, EBP as a central mission, professional advancement systems, involvement in procedure development, and performance evaluations (Fineout-Overholt, et al., 2005; Veeramah, 2008).

Project Plan and Evaluation

Market and Risk Analysis

The market and risk analysis for providing EBP education involved assessing the strengths, weaknesses, opportunities, and threats (SWOT) for the project (see Appendix D for SWOT analysis).There are several strengths this EBP education project brings to the organization. The most important strength includes educating nurses to find and use evidence with the tools available to them such as accessing the online library they already subscribe to

with their Washington State nursing license and linking them to other EBP resources. An additional strength involved utilizing the instructor's 14 years' experience at the agency to develop the curriculum that addresses EBP barriers.

A major weakness of the EBP education involved scheduling the education around the participants' work time, offering classes that can be available to all shifts. Another weakness was barriers to EBP have not been fully addressed by the nursing leadership. These barriers included lack of management's education in implementing EBP to support staff initiating EBP changes, shortage of time to practice what they have learned due to work and home obligations, and budget constraints. Other weaknesses included classroom size (limited to 15 participants) and timing for classes which were held during the Thanksgiving and Christmas holiday season. Four classes were scheduled to accommodate a sample size of at least 45 attendees.

Opportunities included easier adoption of EBP initiatives mandated by regulating bodies that can be associated with improved reimbursements to the hospital. Nurses could be accepted for poster and podium presentations at future events or conferences sharing their EBP project implementation. These types of presentations can be useful in retaining and recruiting nurses along with an opportunity to share how the facility encourages nurses to participate in research or EBP. Another opportunity included the nurse's ability to earn four continuing education credits toward their requirement for licensure renewal in Washington State.

A threat to the project included a possible need to reschedule the education due to a lack of interest or inclement weather or high patent census. Another threat to the education could have come from competing EBP projects. A hospital committee was designing an EBP mentoring program that overlapped the objectives of this project. A threat that was realized involved a large

cut to the nursing continuing education budget in 2011 due, in part, to a decrease in Medicare and Medicaid reimbursements. Consequently, funding to pay nurses their hourly wage to attend the EBP educational classes was not available. This was identified as a significant potential barrier to nurses taking the class.

Need for EBP Education

The nurse vacancy rate at the study agency is 3% placing them slightly higher than the national rate of 2.5% (Santiago, 2011). There is only one nursing school in the local community that offers an ADN program and a recently added RN to BSN program. Recruiting nurses from outside the local community can be challenging making it natural to draw nurses from the local nursing school resulting in a higher percentage of employed ADN graduates compared to BSN (Fox, & Abrahamson, 2009).

At the study agency ADN graduates comprise 63.4% of the nurses, with Diploma-prepared nurses equaling 3.6% and BSN-prepared nurses equaling 33%. These statistics compare to national numbers that show more nurses are prepared at the associate level than the baccalaureate level (Ellenbecker, 2009). Combining a lack of EBP education in the associate curriculum with fewer baccalaureate prepared nurses results in a shortage of nurses with knowledge of the principles of EBP. Health care is changing rapidly, budgets are being tightened, and nurses are being challenged to keep their practice up-to-date. Continuing education on EBP is essential to fill the gap in knowledge if patient outcomes are to be improved (Hader, 2011).

There are very few offerings on EBP education available for nurses in their own communities. Nursing conferences such as the Seattle Nursing Research Consortium (2011)

which sponsors an Annual Nursing Research and EBP Conference is a good resource. This conference offers two days of classes on the basic principles of EBP including how to write a research question and the use of an online library. Schweitzer and Krassa (2010) found several barriers to nurses attending conferences. These barriers include the cost of the conference, inflexible work schedule, child-care, distance to education, and having an unsupportive supervisor. Purchasing EBP education often consists of eLearning activities that are generic in format, leaving little room for customization. Independent educational companies available in Western Washington target specific educational needs such as Basic Life Support, Advanced Cardiac Life Support, rhythm interpretation, and specialty certification education. These programs will need continued support to increase the competency of nurses in their field of expertise. At this time no education company targets the educational need of understanding EBP.

Feasibility and Unintended Consequences

The nursing department at the study facility was supportive of offering EBP education classes. A needs assessment completed by the facility and confirmed by the investigator showed EBP education was the nurse's second highest educational need. Nurses expressed an interest in being part of the project (personal communication with the Magnet® committee on February 3, 2011). The project team helped pave the way to a successful plan. An unintended consequence included nurses wanting more information that drives an ongoing need for EBP education and mentoring.

Stakeholders and Project Team

The nurses involved in the EBP education were stakeholders as they took part in the EBP education class and use the information gained. The patients and their families are stakeholders

as they will be the recipients of the care that nurses provide. The managers are stakeholders as their staff become competent in EBP skills demonstrating acceptance of EBP initiatives and improvements in patient and staff satisfaction scores. Stakeholders also included the Executive Vice President &Chief Operating Officer, Patty Cochrell, MBA, RN. The nursing department reports to her and she is the chairperson of the hospital internal review board. The project team members are stakeholders as they are assisting in the development of the project. The project team includes: the Executive Director of Nursing Practice, Quality and Operations and Chief Nurse, Cindy May, MSN, CNS, RN who directs the vision for nursing at the hospital and is the author's mentor; the author's capstone chair Phyllis Graham-Dickerson, PhD, RN, CNS who provided support and suggestions for the project; team members, Vicki Grant, MS, RN and Cindy Smith-Idell, MSN, CNS, RN were used as advisors for curriculum development, and project implementation; and the remaining person on the team Steve Schaffer, MS, a statistician who was instrumental in answering project design questions and assisting with the analysis of data.

Cost Benefit Analysis

The EBP education was designed to benefit the nurses who attended the class by providing them with information on how to use the principles of EBP including how to find and apply evidence to patient care. Munroe, Duffy, and Fisher, (2008) found educating nurses on EBP is a cost effective way to improve the use of EBP and make practice changes. Health care organizations benefit from the use of EBP by realizing shorter patient length of stays, better-quality care, and improved patient and staff satisfaction. Other benefits for nurses included an

opportunity for intellectual stimulation, and an increase in professional nursing practice that can improve recruitment and retention (Staffileno, &Carlson, 2010).

Benefits of EBP education described in the literature far outweigh the cost of educating the nurses who volunteer to take the class. In order to educate all (N=450) ADN graduate nurses employed by the agency, the classes would need to be made mandatory and costs would include nurse's salaries to attend. Using an average salary of $31.00 per hour it would cost the nursing department $55,980 to educational 450 ADN (Bureau of Labor Statistics, 2010). This is comparable to the cost of one catheter-related bloodstream infection that could have been prevented if the evidence-based central line bundle was followed. Health care facilities are no longer receiving reimbursement from Medicare and Medicaid for this type of infection (Shannon, Patel, Cummins, Shannon, & Ganquli, 2006).To replicate this study, costs may include course development time, course instructor salary, and online library resources (see Appendix E for full budget). Additional benefits would be appreciated if every nurse understood the basic elements of EBP and could speak and demonstrate how the evidence supported a specific practice.

Mission, Vision, and Goal

The mission statement provides a strategic focus for the EBP education project that gives meaning to a vision statement. The vision statement sets the desired outcome. The mission statement for the EBP Educational Gap in Knowledge project was to equip nurses with the knowledge and tools to use EBPs leading to exceptional health care. The vision statement is: By May 2012, ADN nurses at the study agency use implemented EBP to provide patient care. The

project goal was to demonstrate an improvement in EBP beliefs (EBPB) and EBP implementation (EBPI) skills of a sample of ADN graduate nurses.

Process Objectives

The learning objectives for the educational intervention stated by the end of the EBP class the nurses will be able to: 1) identify four ways EBP brings value to the organization (this objective was to establish meaning to improving patient outcomes and satisfaction), 2) develop a researchable practice question in the form of a PICO, 3) use their PICO to find three sources of related evidence (the participants were to access the online library utilizing search strategies to develop efficient methods to find research), and 4) identify what evidence is best for the patient, family, and situation. A journal club style discussion was used to provide education on analyzing research. These objectives were measured using the EBPB Scale and EBPI scale. The objectives for the outcomes included: 1) describe the sample demographics, 2) identify significant correlations between individual demographics and variables, 3) demonstrate improvement in the samples EBPB and implementation skills, and 4) discover if EBPB and implementation skills are sustained four weeks after the educational intervention.

Evaluation Plan

Using a Logic Model (Kellogg, 2004) the sequence of events were discovered that could have influenced the outcomes of the project. Using an educational intervention the project was designed to improve ADN nurses EBPB and EBPI skills. The evaluation was completed using a pre- and post- survey design. Additional outcomes not studied but could be realized are an increase in journal club attendance, nurses questioning their practice, and spot audits demonstrating EBP initiatives have been implemented. The project may impact reportable

patient outcome measures along with improving patient and nurse satisfaction scores (see Appendix F for Logic Model).

Population

The population intended for study was Registered Nurses (RN) who practices with an ADN level of education employed by the agency. A total population of ADN graduates was calculated to be 445 nurses from the agency's Human Resource database (Harrison, 2011). Through an online power analysis calculator, a goal of recruiting 45 ADN nurses was set. A total of 38 nurses attended the EBP class. One failed to complete half of the pre-survey so was dropped from the analysis. The final sample population consisted of 37 nurses (81% ADN, 19% with additional nursing education) who participated in the pre-intervention and post-intervention survey. Of these, 29 (90% ADN) nurses completed the survey four weeks later.

Setting

The agency is a moderate size not-for-profit acute care medical center in a rural Washington State community. It offers general medical and surgical inpatient services with specialties in cardiac surgery, oncology, orthopedics, obstetrics, and stroke care. In addition, it supports the community with two urgent care centers and a variety of clinics. The nurses are part of a unionized environment that is politically active. The educational activity was held in the facility's computer learning lab providing the experience of finding research within the constraints of the hospital internet security.

Methodology and Variables

Using a quasi-experimental design, 38nurses participated in a four-hour educational intervention. A pre- post- test survey designed by Melnyk, et al. (2009) called the EBPB scale

and EBPI scale was used after rights were purchased. One nurse eliminated from the study failed to complete the EBPI portion of the survey. A Survey Monkey® (2011) subscription was utilized to administer the scales just prior to and immediately following the educational intervention, a third one was sent by email to each participant four weeks after the education. A second email notification was sent to all participants two weeks later to encourage participation in the four weeks post survey. The URL link to the Survey Monkey® (2011) questionnaire was included in both emails.

The survey began with eight demographic questions in order to describe the sample participants. The EBPB scale had 16-items to rate on a 5-point Likert-scale with choices of strongly disagree, disagree, neither agree or disagree, agree, and strongly agree. The EBP Implementation Scale had 18-items to rate on a 5-point frequency table. These choices included 0 times, 1-3 times, 4-5 times, 6-7 times, and greater than or equal to 8 times. Data was uploaded and analyzed through SPSS version 20 using descriptive analysis, Cronbach's alpha to demonstrate instrument validity, paired samples t-tests on aggregate data with statistical significance set at $p < .05$, Cohn's d to establish effect size, and Spearman's rank-order correlations.

Protection of Human Rights Procedure

After receiving exempt status for the project through the Regis University internal review board (IRB) and acceptance of that decision by the study agency's IRB, participant selection took place (see Appendices G, H, & I for protection of human rights training certificate and IRB acceptance letters). Excel was used to develop a random list of nurse's names that practice with an ADN level of education in the agency's inpatient and outpatient departments. The first 65

names were sent invitational letters through the U.S. mail. Eight days later only three nurses had signed up for the class prompting the decision to change methods in soliciting participants. The next 200names from the randomized list were sent invitations via email. After invitations were sent by mail or email, assignments were made in the hospital's learning management system (LMS) allowing them to choose a class date and time that fit their schedule. After the classes were held, all names were removed from the assignments in the LMS. Those who participated in the project were marked complete in taking a class called EBP Education on their training history.

Informed consent for the study was discussed and a copy of information provided prior to the participants taking part in the survey. Consent was implied as they chose to participate in the survey. The procedure to protect human rights included keeping communication between the participants and researcher to a minimum prior to the study so the participants did not feel forced to be involved. Caution was taken to not directly refer to the survey questions before or during the class as this could have biased participant responses post education.

Data Collection and Treatment Procedure

Participants accessed the EBPB and EBPI via a link to a Survey Monkey® (2011). This link was sent to their hospital email after they signed the class roster. The anonymous survey took approximately 10-15 minutes to complete. Data was downloaded from the password protected Survey Monkey® (2011) in Excel format and then uploaded to the investigators personal subscription of SPSS statistical program. All records including attendance and class evaluations are being kept either in a password protected computer or in a locked filing cabinet

where only the investigator and others authorized by regulation have access. The data will be saved for three years and then deleted.

Instrumentation, Reliability, and Validity

The EBPB and EBPI scales have been studied by Melnyk, et al. (2009) to establish validity and reliability. Individual responses were shown to be "sensitive to a wide range of attitudes and behaviours" (Melnyk, et al., 2009, p. 214). The study demonstrated "Cronbach's α and Spearman-Brown *r* reliability coefficients exceeded 0.85"indicating excellent internal consistency (Melnyk, et al., 2009, p. 212).

Project Findings and Results

Demographics

Descriptive statistics provided an analysis of the demographic data to describe the sample, discover trends, and determine if there were any significant correlations. The demographic characteristics of the participants are listed in Table 1. A majority of the sample were white (92%), female (89.5%), held an associate level of nursing degree (81%) and had not taken a class in research (73%). Diverse nursing specialties were in attendance as represented by 15 different departments. Most participants (70%) were between 41-60 years old with 60% practicing in nursing for 10 years or less (see Table 1).

Table 1

Demographic Profile of Participants

	ADN (%)	Additional Education* (%)	Total (%)
n (%)	30 (81)	7 (19)	37 (100)
Gender: Male	4 (13.3)	0	4 (11)
Female	26 (86.7)	7 (100)	33 (89)
Age: 21-30	4 (13.3)	0	4 (11)
31-40	4 (13.3)	1 (14.3)	5 (14)
41-50	11 (36.6)	1 (14.3)	12 (32)
51-60	10 (33.3)	4 (57.1)	14 (38)
Greater than 60	1 (3.3)	1 (14.3)	2 (5)
Department:			
Progressive Care Unit	2 (6.7)	2 (28.6)	4 (11)
2 Southeast/Respiratory/Stroke	1 (3.3)	1 (14.3)	2 (5)
Float Pool	1 (3.3)	0	1 (3)
3 North/Medical	1 (3.3)	0	1 (3)
2 South/Medical	1 (3.3)	0	1 (3)
4 West/Medical/Surgical	4 (13.3)	0	4 (11)
3 West/Orthopedics	4 (13.3)	1 (14.3)	5 (14)
2 West/Oncology	3 (10)	2 (28.6)	5 (14)
Intensive Care	1 (3.3)	0	1 (3)
Harrison Health Partners	2 (6.7)	0	2 (5)
Emergency Department	5 (16.7)	0	5 (14)
Labor and Delivery	1 (3.3)	1 (14.3)	2 (5)
Acute Care/Pediatrics	1 (3.3)	0	1 (3)
Other	3(10)	0	3()
Nursing professional organization			
Yes	14 (46.7)	1 (14.3)	15 (41)
No	16 (53.3)	6 (85.7)	22 (59)
Years in nursing			
Less than 5	6 (20)	1 (14.2)	7 (19)
6-10	12 (40)	1 (14.2)	13 (35)
11-15	5 (16.7)	0	5 (14)
16-20	1 (3.3)	1 (14.2)	2 (5)
21-25	2 (6.7)	1 (14.2)	3 (8)
26-30	0	1 (14.2)	1(3)
Greater than 30	4 (13.3)	2 (29)	6 (16)
Taken a BSN level research class			
Yes	5 (16.7)	3 (43)	8 (22)
No	25 (83.3)	4 (57)	29 (78)

*Diploma (2), BSN (4), MSN (1)

Improving EBPB and EBPI

Participants were asked 16 questions related to their understanding and beliefs on EBP and 18 questions on how often they use EBPI skills just before a four-hour class on the principles of EBP (refer to Appendix J for question details). The same questions were asked of the group immediately following the education and then repeated four weeks later. Each individual's scores were totaled for the EBPB scale and the EBPI scale. Total participant aggregate data from the EBPB scale and EBPI scale was used for analysis after reversing two negatively focused questions. Cronbach's alpha demonstrated instrument reliability for both the 16 item EBPB scale ($\alpha = 0.896$) and the 18 item EBPI scale ($\alpha = 0.931$).

On the ADN pre- EBP survey there were four variables that significantly correlated to belonging to a professional nursing organization with $p < 0.01$ and nine variables with $p < 0.05$. On the post- EBP survey, three of the same variables continued to correlate significantly to belonging to a professional nursing organization: A clear understanding of the steps of EBP ($p < 0.01$), understands how to search answers to health questions efficiently way ($p = 0.046$), and believe in implementing EBP to improve patient care ($p = 0.03$) (Melnyk, et al., 2009).

On the ADN pre- EBP survey there was one variable that significantly correlated to participation in a class on research or EBP that had a $p < 0.01$ and four variables with a $p < 0.05$. On the post- EBP survey, three of the same variables continued to correlate significantly: Has used evidence to change their practice ($p = 0.045$), has presented evidence from to other nurses ($p = 0.03$), and has used the Cochrane database of systematic reviews ($p < 0.01$). ADN nurses who had taking a class on research or EBP did not significantly correlate to improved EBPB ($p =$

0.77) or EBPI ($p = 0.36$) scores but nurses who had additional education (Diploma, BSN, Masters) saw a significant improvement in EBPB ($p < 0.01$) (Melnyk, et al., 2009).

When analyzing the overall participants' pre-EBPB aggregate scores to immediately post-education, a statistically significant increase was demonstrated ($p = 0.019$). This increase was maintained from their pre-scores to the four weeks post- scores ($p < 0.01$). Overall participant EBPI aggregate scores did not demonstrate a statistically significant increase immediately post-education ($p = 0.076$) (see Table 2).

To more fully address the target population associated with the PICO, ADN graduate EBPB and EBPI scores were stratified out of the sample and *t*-tests performed. An increase in scores were demonstrated with a statistically significant difference between the pre-EBPB and the post- EBPB ($p < 0.01$) and the pre-EBPB and four weeks post- EBPB ($p = 0.02$). EBPI scores demonstrated an increase between the pre- and post- surveys and the pre- and four weeks post- surveys but the differences were not statistically significant ($p = 0.090$ and $p = 0.207$ respectively).

The magnitude of effect demonstrated by Cohen's *d* is moderate between the pre-EBPB and the post-EBPB for both all participants (0.55) and stratified ADN graduates (0.58) remained moderated between the pre- EBPB and four weeks post- EBPB for all participants (0.47). For the pre- and post-EBPI surveys the ADN scores had a moderate effect (0.488). There was a small increase in effect for all participants between the pre- and post- EBPI and the pre- and four weeks post- EBPI (0.35 and 0.42 respectively). The rest of the surveys had either a small or small to moderate magnitude of effect (see Table 2 and Table 3).

Table 2

All participants EBPB and EBPI paired samples statistics

Pair	n	Mean Aggregate Score	Std. Deviation	Std. Error Mean	T-test *p* value	Cohen's *d*
Pre-EBPB	37	57.57	4.89	0.803	0.019	0.55
Post-EBPB	37	61.65	9.24	1.519		
Pre-EBPB	29	58	4.7	0.87	< 0.01	0.47
4 Weeks Post-EBPB	29	62.45	5.63	1.05		
Post-EBPB	29	61.72	9.85	1.83	0.77	0.09
4 Weeks Post-EBPB	29	62.45	5.63	1.05		
Pre- EBPI	37	35.03	14.33	2.36	0.076	0.35
Post- EBPI	37	40.08	14.97	2.46		
Pre- EBPI	29	35.55	14.26	2.65	0.125	0.42
4 Weeks Post-EBPI	29	41.59	14.5	2.69		
Post-EBPI	29	42.83	15.37	2.85	0.778	-.083
4 Weeks Post-EBPI	29	41.59	14.5	2.69		

Table 3

ADN stratified EBPB and EBPI paired samples statistics

Pair	n	Mean Aggregate Score	Std. Deviation	Std. Error Mean	T-test *p* value	Cohen's *d*
Pre-EBPB Post-EBPB	30 30	54.60 59.03	4.507 5.648	.822 1.031	< 0.01	0.578
Pre-EBPB 4 Weeks Post-EBPB	25 25	39.80 46.50	14.798 15.384	2.70 2.81	0.02	0.320
Post-EBPB 4 Weeks Post-EBPB	25 25	58.84 58.60	6.011 5.605	1.20 1.12	0.89	-0.028
Pre- EBPI Post- EBPI	30 30	55.08 58.60	4.261 5.605	0.85 1.12	0.09	0.488
Pre- EBPI 4 Weeks Post-EBPI	25 25	40.84 45.68	14.932 14.941	2.986 2.988	0.21	0.260
Post-EBPI 4 Weeks Post-EBPI	25 25	47.00 45.68	15.803 14.941	3.161 2.988	0.79	-0.086

Post-EBP educational intervention evaluations demonstrated an average of 4.7 on a Likert scale with one demonstrating low and five as high for overall satisfaction of the class. Each person indicated their knowledge, skills, and confidence had improved after the class. Comments were positive and included requests for additional classes.

Discussion

The results of the study demonstrate the effectiveness of education on the principles of EBP on ADN graduate nurses' beliefs and this improvement can be sustained for at least four weeks. Some improvement was lost when comparing the post- intervention score to the four

weeks post- score suggesting a need for continued reinforcement. When the small sample of nurses who had additional nursing education was included in the analysis, their post- EBPB scores were similar in effect to the ADN graduate scores except they sustained a higher effect for four weeks (see Table 2 and Table 3). The results of the EBPB survey are consistent with other studies that measured a change in beliefs associated with education (Varnell, Haas, et al., 2007; Melnyk, et al., 2009)

The education had a moderate effect on nurses' implementation skills but was not statistically significant for either group. The nurses who had taken a class in research correlated significantly with higher EBPI scores suggesting their familiarity with the terms used in the EBPI scale. These four hours of didactic education were not adequate to break down the barriers that nurses face in implementing EBP initiatives. Additional support and education needs to be considered when initiating EBP changes.

Limitations, Recommendations, Implications for Change

Limitations

The population of ADN graduate nurses may not be fully represented as a power analysis set the goal for the sample to be 45 participants and only 30 ADN's were recruited. The study took place in early December during the holiday season when nurses may have had competing priorities. A piece of the education required the participants to have access to the computer with internet capability limiting the class sizes to 15. Class rosters filled but had a 36% no show rate leaving several seats inaccessible to prospective participants. Since nurses practicing with an associate level of education were the focus of the project, steps to recruit only these nurses were attempted. The classes consisted of 81% ADN graduates. The EBP education was limited to four

hours which minimized the time spent on the implementation process. This could be a reason why the EBPI scores were not as positive.

Recommendations

Very few associate level nursing schools teach the principles of EBP and many nurses with bachelor degrees are unfamiliar with online resources (Ellenbecker, 2009). A recommendation is to actively advocate for the development of a policy to mandate the principles of EBP are part of the associate level of nursing education standard curricula or a policy that requires ADN graduates to return to school for their BSN within a specified amount of time (Matthias, 2010). Having a policy to drive the change will eventually decrease the gap in EBP knowledge. Currently there is a high percentage of ADN graduates working in acute care facilities without education on the principles of EBP. Providing this education is a cost effective way to bridge the gap in knowledge and improve nurses' implementation abilities. Internships, mentoring programs, and establishing processes to guide implementation have been studied and found to be effective in overcoming EBP barriers (Cullen, Titler, & Rempel, 2010). Utilizing employed acute care advanced practice nurses to provide leadership in implementing EBP initiatives would allow them to utilize their education and expand their role within the health care facility. One last recommendation is to encourage nurses to be active participants in a professional nursing organization that provides a method of keeping them informed on the latest evidence in their area of interest and may improve its use.

Implications for Change

EBP education may help prepare nurses to plan and provide care based on evidence. If all nurses had baseline knowledge in the principles of EBP, implementation could focus on the

evidence and not on why the practice needs to change. Nurses who have had education in research or EBP may not have had the opportunity to learn how to use an online library or other EBP resources and could benefit from having additional education. Evidence continues to shape the delivery of health care forcing practice changes that affect patient outcomes. Nurses will need to be ready to access resources to answer their questions choosing the plan of care that is backed by evidence and is best for the patient and situation. Additional instruction along with continued support through journal clubs and mentorship, need to be explored to help build and sustain nurse's beliefs and skills to implement EBP change.

Conclusions

EBP has become essential in providing care to patients. Regulatory bodies are using it to force health care facilities to improve patient care and safety by publicly reporting statistics that are influenced by the use of EBP. Providing education in EBP can improve nurses' beliefs but implementation skills may need additional support to encourage use of these concepts. If EBP education is not provided to nurses, nurses will continue to struggle with EBP initiatives. Success of this project has triggered interest from nurses who want to learn more about EBP. The education is providing a baseline for EBP changes. More work will need to be done to build resources and eliminate barriers that can get in the way of implementing EBP change.

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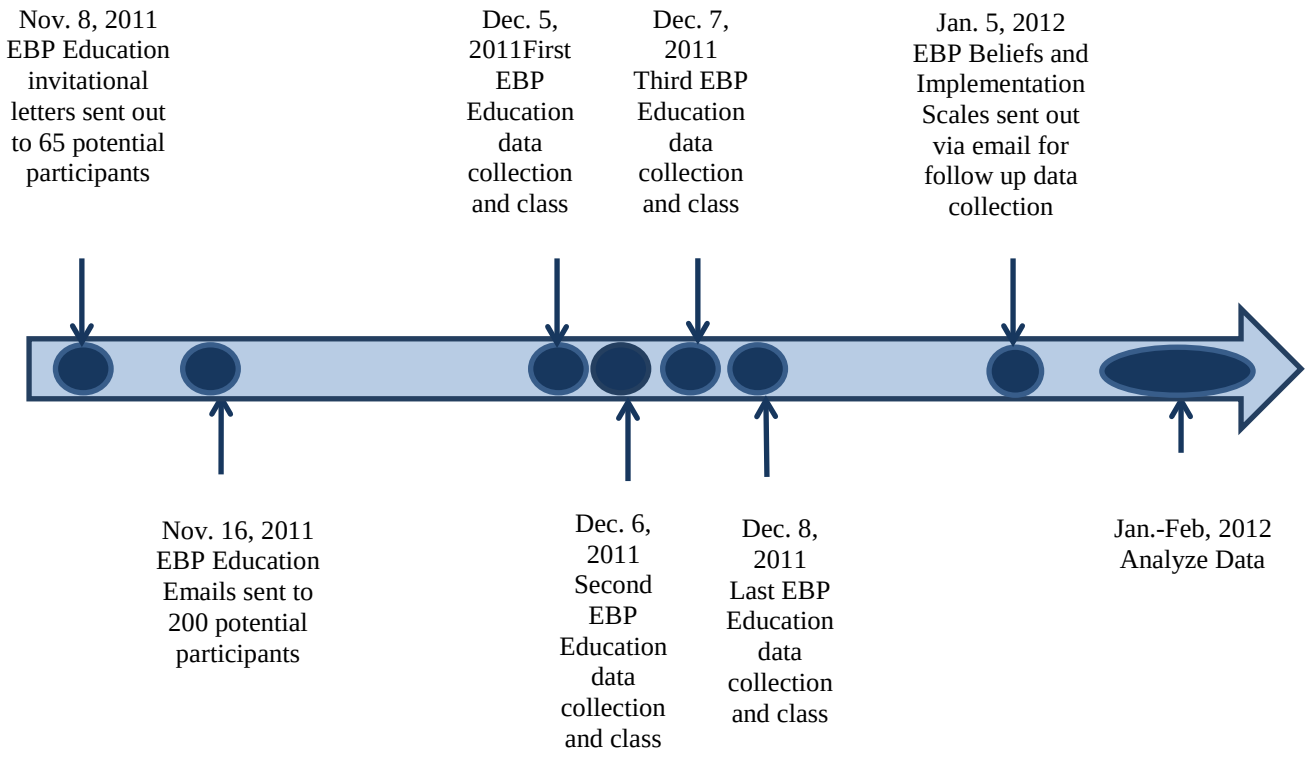
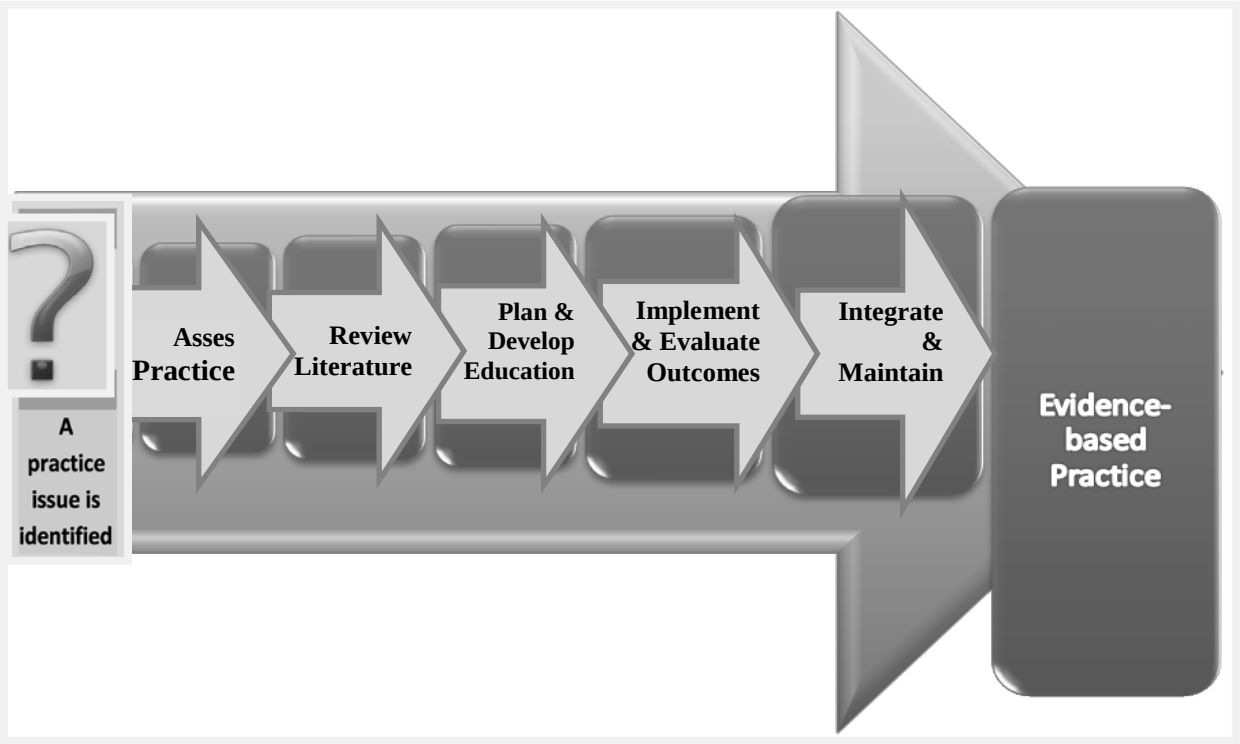
Appendix A: Timeline for EBP Education



Note: The data collection and EBP education classes were scheduled for December 5-8, 2011. Selection of participants was completed the first part of November and invitations sent to 65 ADN graduate nurses through the U.S. mail on November 8, 2011. November 16, 2011, invitational emails were sent to an additional 200 ADN nurses. A follow up survey was sent to all who participated in the intervention on January 5, 2012. Data analysis took place in January and February 2012.

Appendix B: Concept Map



(Based on Rosswurm and Larabee Model for EBP, 1999)

Appendix C: Evidence Table

Systematic Review Evidence Table Format [adapted with permission from Thompson, C. (2011). Sample evidence table format for a systematic review. In J. Houser & K. S. Oman (Eds.), Evidence-based practice: An implementation guide for healthcare organizations (p. 155). Sudbury, MA: Jones and Bartlett.]				
Article Title and Journal #1-4	1. An Advanced Educational Program Promoting Evidence-Based practice. *West Journal of Nursing Research, 33* (3), 345-364.	2. Barriers to evidence-based nursing: a focus group study. *Journal of Advanced Nursing, 60* (2), 162-71.	3. Building evidence-based practice with staff nurses through mentoring, *Journal of Neonatal Nursing, 15* (3), 81-87.	4. Comparison of Evidence-Based Practice between Physicians and Nurses: A National Survey of Regional Hospitals in Taiwan; *Journal of Continuing Education in the Health Professions, 30 (2), 132-8.*
Author/Year #1-4	Cullen, L., Titler, L., and Rempel, M., (2010).	Hannes, K., Vandersmissen J., De Blaeser, L., Peeters, G., Goedhuys, J., Aertgeerts, B., (2007).	Mariano, K., Caley, L., Eschberger, L., Woloszyn, A., Volker, P., Leonard, M., Tung, Y., (2009).	Chiu, Y., Weng, Y., Lo, H., Hsu, C., Shih, Y., Kuo, K., (2010)
Database and Keywords #1-4	CINAHL with Full Text; Evidence-based practice, nursing, process	CINAHL with full text; Evidence-based practice, nursing	CINAHL with full text; EBP beliefs	CINAHL with full text; nurses, evidence-based practice
Research Design #1-4	Interventional study, Descriptive	Focus groups, Descriptive Qualitative	Descriptive study	Descriptive study
Level of Evidence (Houser and Oman, p 203) #1-4	Level IV	Level IV	Level IV	Level IV
Study Aim/Purpose #1-4	The purpose of this article was to describe an advanced educational program for nurses in leadership roles responsible for guiding teams and mentoring colleagues through the challenges inherent in the EBP process.	This paper reports a study to explore the barriers to evidence-based nursing (EBN) among Flemish (Belgian) nurses.	The purpose of this pilot study was to examine the effect of mentoring in EBP on NICU nurses. The aim was to determine if mentoring could change nursing practice in the study setting by developing a group of nurses with expertise in EBP.	To investigate EBP among physicians and nurses in 61 regional hospitals of Taiwan
Population Studied/Sample Size/Criteria/ Power	nurse leaders	Nurses/n=53	20 NICU nurses	Taiwan doctors and nurses; 605 physicians and 551

#1-4				nurses
Methods/Study Appraisal/ Synthesis Methods #1-4	Review of literature, Evaluation of program	A grounded theory approach and five focus groups were organized between September 2004 and April 2005 in Belgium. They used purposeful sampling to recruit 53 nurses working in different settings. A problem tree was developed to establish links between codes that emerged from the data.	Survey using the EBP beliefs scale and the EBP implementation scale.	A structured questionnaire survey was used to investigate EBP among physicians and nurses in 61 regional hospitals of Taiwan. Valid postal questionnaires were collected.
Primary Outcome Measures and Results #1-4	The first section asked for feedback on meeting overall program objectives in a yes–no format (Table 2). The second section asked participants to rate their agreement (strongly agree to strongly disagree on a 1-5 Likert-type scale) to statements about the program's facilitation of their learning (Table 3). The third section had open-ended questions asking about challenges with evidence-based practice and suggestions to improve the program. Results from the evaluation were overwhelmingly positive. One goal of the program was to arm participants with what they needed to successfully apply their learning in promoting adoption	The majority of the barriers were consistent with previous findings. Flemish (Belgian) nurses added a potential lack of responsibility in the uptake of evidence-based nursing, their 'guest' position in a patient's environment leading to a culture of adaptation, and a future 'two tier' nursing practice, which refers to the different education levels of nurses. The problem tree developed serves as a basic model for other researchers who want to explore barriers within their own healthcare system and a useful tool for orienting change management processes.	The paired t-test results showed no significant increase in either EBP beliefs score through mentoring. The Pearson correlation coefficient indicated a moderate degree of correlation between changes in beliefs scores and changes in implementation scores with a trend toward significance.	Physicians were more aware of EBP than nurses. Although both groups had high recognition of belief in and favorable attitudes toward EBP, their knowledge of and skill in EBP were relatively low. When compared with nurses, physicians were more willing to support the promotion of EBP implementations in clinical services. Physicians' knowledge and skills regarding the application of EBP principles were greater than nurses. Physicians more often accessed the on-line evidence-retrieval databases, including the Cochrane Library. The most commonly ranked barriers to EBP applications for both groups included lack of

	of EBP within their own organization. An immediate post program evaluation provided valuable feedback but could not determine the success of the program in meeting this goal.			designated personnel, lack of convenient kits, limited basic knowledge of EBP, and time.
Author Conclusions/ Implications of Key Findings #1-4	Adopting EBP within complex health care organizations remains a challenge. Perhaps routine use of EBP will eventually become universal and health care outcomes consistently optimized, but until that vision is achieved, clinicians will continue to need information and support to improve delivery of evidence-based health care within complex organizations. The Institute is a highly effective application-oriented educationalprogram promoting successful adoption of evidence-based practices in many health care systems across the United States. The return on investment from attending the program is clearly seen through improved patient, staff, and fiscal outcomes.	Despite the fact that the problem tree presented is context-specific for Flanders (Belgium), it gives an opportunity to develop clear objectives and targeted strategies for tackling obstacles to EBN. Findings report a lack of time, a difficult access to resources, a hierarchical structure, a lackof support from doctors or management, a lack of relevant studies for nursing, a lack of computer and other skills, little motivation to carry out EBP, a reluctance to change practice, the impact of pharmaceutical companieson evidence, a culture promoting 'acting' instead of 'researching'and the experience of patients as an important outcome measure for evaluating clinical practice.	Although study results showed mentoring nurses in EBP had a minimal effect on individual scores on EBP beliefs and implementation scales, significant process changes occurred in the NICU that may have been the result of the project. Practice changes based on literature findings and nurses' clinical experience were proposed that were intended to improve patient outcomes and increase family support. One year after the study completion, positive changes have been integrated into the NICU setting.	There were significant discrepancies between physicians and nurses in their awareness of, attitude toward, knowledge of, skill in, behavior toward, and barriers regarding EBP. In implementing EBP, strategies to overcome barriers and provide on-line evidence-retrieval systems should differ for physicians and nurses.
Strengths/ Limitations #1-4	Strength: They had a successful educational program	Strength: Supported other literature in showing barriers to	Strength: Mentoring provided a positive atmosphere in which	Strength: Viewed attitudes between physicians and

	in increasing EBP knowledge. Improved patient outcomes were documented. Limitation: Sections of the evaluation could have been expanded to provide additional data to inform future work. Immediate post program evaluations could have included more specific evaluation of participant knowledge and barriers experienced. Evaluation of the long-term impact included a relatively small number of responses	EBP are reported as lack of time, difficult access to resources, hierarchical structure, a lack of support from doctors or management, a lack of relevant studies for nursing, a lack of computer and other skills, little motivation to carry out evidence-based practice, a reluctance to change practice, the impact of pharmaceutical companies on evidence, and the experience of patients as an important outcome measure for evaluating clinical practice. Limitation: The sample was neither random nor representative. Nurses were working in different settings, such as hospitals, home care and elder care. There were only one or two focus group comparisons between nurses working in different settings.	the nurse mentors worked closely with staff nurses and provided guidance in the EBP model. Staff nurses were appreciative of the credibility given to their experience and the opportunity to effect changes, and expressed the opinion that it was a worthwhile experience. Limitation: Because of the small sample size (n =17) for the regression analysis, the present study model for EBP beliefs score change can only be used as a preliminary one.	nurses. Capability to implement EBP was higher in physicians than nurses. Limitation: Inaccuracy may occur in a self-completion questionnaire survey. The proportion of responding was only 69.1%. The response bias cannot be obtained because information regarding non-respondents was not available. There could be a potential gender bias due to a high co-linearity to professional specialty.
Funding Source #1-4	None noted	None noted	None noted	Research grant from the National Health Research Institutes, Taiwan
Comments #1-4	This article describes an educational program for leaders in a medical center. It studies the outcomes of the program. It	Demographics were obtained and focus groups used to collect qualitative data. These questions addressed physicians,	This was a study using the EBP Beliefs scale and the EBP implementation scale similar to the outcomes project I will be completing.	There are good questions to be used in surveying nurses and gives barriers to using evidence. It supports education of EBP and needing

	was very successful but unclear on the amount of sustainability.	education, characteristics of managers/supervisors, and nurses, payment, and characteristics of evidence. A problem tree was used to link and locate barriers. It can be used to see clusters of barriers. This has good barrier information for the project.		online library resource.
Systematic Review Evidence Table Format [adapted with permission from Thompson, C. (2011). Sample evidence table format for a systematic review. In J. Houser & K. S. Oman (Eds.), Evidence-based practice: An implementation guide for healthcare organizations (p. 155). Sudbury, MA: Jones and Bartlett.]				
Article Title and Journal #5-8	5. Determining Registered Nurses' Readiness for Evidence-Based Practice. Worldviews on Evidence-Based Nursing, 5 (4), 182-92.	6. Effect of an Educational Intervention on Attitudes Toward and Implementation of Evidence-Based Practice. *Worldviews on Evidence-Based Nursing.*5 (4), 172-81.	7. Evidence-based practice-focused interactive teaching strategy: A controlled study. *Journal of Advanced Nursing, 65* (6), 1218–1227.	8. Evidence-Based Practice: A Primer for Action. *Issues in Comprehensive Pediatric Nursing. 30* (4), 165–182.
Author/Year #5-8	Thiel, L., Ghosh, Y., (2008).	Varnell, G., Haas, B., Duke, G., Hudson, K., (2008).	Kim, S., Brown, C., Fields W. & Stichler J., (2009).	Bliss-Holtz, J., (2007).
Database and Keywords #5-8	Medline, CINAHL with full text; evidence-based practice, readiness, attitudes, knowledge, implementation	Medline, CINAHL with full text; theory, evidence-based practice	CINAHL with full text; evidence-based practice	Academic Search Premier; evidence-based practice, history, and nursing
Research Design #5-8	Descriptive study	Quasi-experimental design	Quasi-experimental, controlled, pre- and post-test study	Historical Review
Level of Evidence (Houser and Oman, p 203) #5-8	Level IV	Level IIIC	Level III C	Level IV
Study Aim/Purpose #5-8	The purpose of this study was to assess registered nurses' readiness for EBP before implementation of a hospital-wide nursing EBP initiative.	The purpose of this study was to evaluate the effectiveness of an accelerated educational program on the attitudes toward and implementation of	This paper was a report of a study to evaluate the effectiveness of the evidence-based practice (EBP)-focused interactive teaching (E-FIT) strategy.	The purpose of this article is to present a brief history of the definition of EBP, describe some of the more well-known models of knowledge translation, discuss

		evidence-based practice (EBP) among nurses employed in acute-care facilities.		some of the commonly agreed-upon steps in the EBP process, and present some resources that might be useful for readers.
Population Studied/Sample Size/Criteria/ Power #5-8	Registered nurses/n = 121	Nurses/n=49/effect size of 1.4, power was established at greater than 0.995	4th-year nursing students; N=208	None noted
Methods/Study Appraisal/ Synthesis Methods #5-8	Descriptive cross-sectional survey design was used;	A pre- and post-test survey design was conducted, using Melnyk and Fineout-Overholt EBP Beliefs (EBPB) and EBP Implementation (EBPI) Scales. Basic demographic data were also collected. Participants attended a 2-hour class each week conducted by four faculty members of a local university. Pre- and post-test mean scores of the EBP barriers (EBPB) and EBP implementation (EBPI) scales were compared using paired t tests to determine the effect of the accelerated development program.	A quasi-experimental, controlled, pre- and post-test study involving senior, 4th-year nursing students (N = 208) at two nursing schools in the USA was carried out from August 2007 to May 2008. The experimental group (n = 88) received the E-FIT strategy intervention and the control group (n = 120) received standard teaching. A Knowledge, Attitudes and Behaviors Questionnaire for Evidence-Based Practice were used to assess the effectiveness of the E-FIT strategy.	Review of literature
Primary Outcome Measures and Results #5-8	The majority (72.5%) of respondents indicated that when they needed information, they consulted colleagues and peers rather than using journals and books; 24% of nurses surveyed used the health	Respondents reported higher scores on both the beliefs and implementation scales at the end of the program. Paired t tests indicated a significant difference in means for both the EBPB	Independent t-tests showed that the experimental group had statistically significant higher post-test EBP Knowledge (mean difference = 0.25; P = 0.001) and Evidence-Based Practice Use (mean difference = 0.26; P	Measuring outcomes before and after implementation is vital and existing systems of measurement should be looked at before inventing new ones.

	database, CINAHL. The respondents perceived their EBP knowledge level as moderate. Cultural EBP scores were moderate, with unit scores being higher than organizational scores. The nurses' attitudes toward EBP were positive. The post hoc analysis showed many significant correlations.	($p < .01$) and EBPI ($p < .01$).	= 0.15) subscale scores compared to the control group, but showed no statistically significant differences in Attitudes toward EBP and Future Use of EBP (mean difference = 0.12; P = 0.398 and mean difference = 0.13; P = 0.255 respectively). Hierarchical multiple regression analyses of the post-test data indicated that the intervention explained 76% and 51% of variance in EBP knowledge and EBP use respectively.	
Author Conclusions/ Implications of Key Findings #5-8	Nurses have access to technological resources and perceive that they have the ability to engage in basic information gathering but not in higher level evidence gathering. The elements important to EBP such as a workplace culture and positive attitudes are present and can be built upon. A "site-specific" baseline assessment provides direction in planning EBP initiatives. The Nurses' Readiness for EBP Survey is a streamlined tool with established reliability and validity.	Nurses who attend an accelerated educational program have the potential to significantlyimprove beliefs and attitudes about EBP. Administrative support and collaboration between academia and service are essential for successful intervention.	The EBP-focused interactive teaching strategy was effective in improving the knowledge and use of EBP among nursing students but not attitudes toward or future use of EBP.	From the inception of the term "evidence-based practice," nursing has slowly embraced the concept as a useful tool by which to identify "critical masses" of evidence generated through systematic research and to build efficient and effective nursing practice.
Strengths/	Strength: Before	Strength: This study	Strength: Students'	Strength: Overall

Limitations #5-8	implementing an EBP initiative, a baseline site-specific assessment should be conducted to determine readiness for EBP. A readiness for EBP assessment for nurses should include: informational needs (e.g., informational literacy), knowledge, culture (unit and organization), and nurses' attitudes toward EBP. Limitation: Nurses have access to technological resources and perceive that they have the ability to engage in basic information gathering but not in higher level evidence gathering. The elements important to EBP such as a workplace culture and positive attitudes are present and can be built upon. A "site-specific" baseline assessment provides direction in EBP initiatives. The Nurses' Readiness for EBP Survey is a streamlined tool with established reliability and validity.	showed the effectiveness of an accelerated development program for nurses in acute-care settings, regardless of nurse's degree or role. Limitation: Further, study on a second group of nurses from these organizations will also be important to see if the findings can be replicated. It is likely that the organizations sent their first-choice champions to these first educational sessions. Replication of this study in other settings might support the use an educational intervention.	self-confidence in clinical decision-making was found to be a statistically significant predictor variable for use and future use of EBP. These results appear to be consistent with self-efficacy theory, which predicts that an individual who has high confidence will be more likely to carry out the learned behavior. Limitation: Neither study included a control group; these improvements cannot be attributed conclusively to the educational interventions alone. The lack of randomization and difference in timing of the educational interventions in the academic year could have introduced confounding variables or bias that may limit the internal validity of the findings.	description of the EBP process. Limitation: None noted
Funding Source #5-8	None noted	None noted	None noted	None noted
Comments #5-8	This study reinforces that nurses turn to their colleagues and peers	A trans-theoretical model of organizational change effectively	This article provides an EBP focused interactive teaching strategy may be	This is a nice review of the history of EBP. It covers the major theories of

	instead of using research. Even when there are resources available to do research, they do not use it. Nurses perceive they have the knowledge to do research but often do not. A readiness assessment can identify nurses' engagement in reading journals and positive attitudes toward EBP that can be built upon. Associates education level with attitudes and skills. This article has an informational needs assessment to consider for the project.	guided the research and is supported by the findings of this study.	useful in preparing nursing students for EBP. It did not statistically improve attitudes toward EBP. It could be useful for my population. I will want to compare it to other teaching strategies in the literature.	EBP implementation and the process to implement EBP.
Systematic Review Evidence Table Format [adapted with permission from Thompson, C. (2011). Sample evidence table format for a systematic review. In J. Houser & K. S. Oman (Eds.), Evidence-based practice: An implementation guide for healthcare organizations (p. 155). Sudbury, MA: Jones and Bartlett.]				
Article Title and Journal #9-12	9. Exploring strategies for promoting the use of research findings in practice. British Journal of Nursing, 17 (7), 466-471.	10. Factors influencing the development of evidence-based practice: a research tool, *Journal of Advanced Nursing, 57* (3), 328-38	11. Interventions to improve question formulation in professional practice and self-directed learning (Review). *Cochrane Database of Systematic Reviews,* (5).	12. Nurses' Perceptions of Research Utilization in a Corporate Health Care System. *Journal Of Nursing Scholarship: An Official Publication of Sigma Theta Tau International Honor Society of Nursing, 40* (1), pp. 39-45
Author/Year #9-12	Veeramah, V., CINAHL (2008).	Gerrish, K., Ashworth, P., Lacey, A., Bailey, J., Cooke, J., Kendall, S., McNeilly, E., (2007)	Horsley T, O'Neill J, McGowan J, Perrier L, Kane G, Campbell C., (2010).	McCloskey, D., (2008).
Database and Keywords #9-12	CINAHL with full text; research and nursing	CINAHL with full text; evidence, instrument	Cochrane Database of Systematic Review; evidence-based and nursing and process	Medline & CINAHL with full text; evidence-based practice
Research Design #9-12	A cross-sectional survey approach was	Correlation study	Systematic review	Descriptive, quantitative design

	used and the data were collected in 2005.			with survey methods.
Level of Evidence (Houser and Oman, p 203) #9-12	Level IV	Level IV	Level I	Level IV
Study Aim/Purpose #9-12	The aim of this study was to explore strategies that nurse and midwifery lecturers from one university- in the south east of England can use to work collaboratively with practicing nurses and midwives to further promote their use of research findings in practice.	A study to develop and test a tool for assessing a range of factors influencing the development of evidence-based practice among clinical nurses	To assess the effectiveness of interventions for increasing the frequency and quality of questions formulated by healthcare providers in practice and the context of self-directed learning.	To explore selected characteristics of nurses based upon educational level (masters, baccalaureate, associate degree/diploma), years of experience, and hospital position (management, advanced practice, staff nurse) that might affect perceived availability of research resources, attitude towards research, support, and research use in practice.
Population Studied/Sample Size/Criteria/ Power #9-12	60 nurse and midwifery lecturers from the higher education institution, and 90 clinical managers from a number of NHS Trusts where nursing and midwifery students undertake their clinical placement, were invited to take part in the project	In study 1, a sample of 598 nurses working at two hospitals in one strategic health authority in northern England was surveyed. In study 2, a slightly expanded version of the questionnaire was employed in a survey of 689 community nurses in 12 primary care organizations in two strategic health authorities, one in northern England and the other in southern England.	Studies were obtained from searches of electronic bibliographic databases, and supplemented these with hand searching, checking reference lists, and consultation with experts.	Nurses in five hospitals; n=270
Methods/Study Appraisal/ Synthesis Methods #9-12	Descriptive statistics in the form of frequency counts and percentages were used to analyze	Measurement scales currently available to investigate the use of evidence in nursing practice	Many types of studies were considered of any language examining interventions for	Nurses in five hospitals within a corporate hospital system were surveyed using

	the data using the Statistical Package for Social Science	focus on nurses' sources of knowledge and on barriers to the use of research evidence. The mean and standard deviation for each item were calculated, and the Pearson correlation of each item with each other item was calculated.	increasing the quality and frequency of questions formulated by health professionals.	the Research Utilization Questionnaire (RUQ). The RUQ was used to measure nurses' perceptions of research utilization in the four dimensions of perceived use of research, attitude toward research, availability of research resources, and perceived support for research activities.
Primary Outcome Measures and Results #9-12	Forty out of the 60 nurse and midwifery lecturers and 62 out of the 90 clinical managers returned their completed questionnaires, giving response rates of 67% and 69% respectively.	The measurement characteristics of the new questionnaire were shown to be acceptable. Ten significant, and readily interpretable, factors were seen to underlie nurses' relation to evidence-based practice.	Two review authors independently undertook all relevancy screening and 'Risk of bias' assessment in duplicate. Intervention characteristics, follow-up intervals, and measurement outcomes were diverse and precluded quantitative analysis.	ANOVA was used to analyze the data. Statistically significant differences ($p<.001$) were found in the perceived use of research, attitude toward research, availability of research resources, and perceived support for research activities based on educational level and organizational position. No significant differences were found in the perception of nurses based on years of experience.
Author Conclusions/ Implications of Key Findings #9-12	The article offers some answers to the main ongoing issue of how nurse and midwifery teachers can become the academic subject specialists required by higher education institutions and at the same time maintain their clinical expertise.	Strategies to promote evidence-based practice need to take account of the differing needs of nurses and focus on a range of sources of evidence. The Developing Evidence-Based Practice (DEBP) questionnaire can	Evidence from the review suggests that interventions to increase the quality of questions formulated in practice produce mixed results at both short- (immediately following intervention), and moderate-term follow up (up to	The results of this study have implications for staff nurses, administrators, advanced practice nurses, and educators working in hospital systems. The different perceptions based upon educational level and hospital

		assist in assessing the specific 'evidencing' tendencies of any given group of nurses.	nine months), comparatively. Although three studies reported effectiveness estimates of an educational intervention for increasing the quality of question formulation within the short term, only one study examined the effectiveness in the longer term (one year) and revealed that search skills had eroded over time. Data suggests that sustainability of effects from educational interventions for question formulation is unknown.	position can be integrated and used at all levels of nursing practice to promote research utilization and EBP initiatives within the organizational structure. Clinical Implications: The results of this study have
Strengths/ Limitations #9-12	Strength: The majority of lecturers and clinical managers agree that clinical staff should be made more aware of research evidence relevant to their own specialties. Limitation: One limitation of this study is that the data were collected in 2005; Another limitation is that the Endings were generated from nurse and midwifery lecturers from one university and clinical managers from six NHS Trusts in the UK. It must be acknowledged that some of the literature cited could be considered as dated but there is no new evidence that	Strength: The sample size was good for testing the tool. The psychometric properties of the tool showed reliability on 10 identifiable factors. Limitation: This article suggests that the instrument is a valid and reliable measure, although further testing is required to fully establish its validity and reliability. The generalizability of the DEBP questionnaire has been shown to extend to nurses in hospital and community settings in England. However, its validity in other countries remains to be	Strength: Studied short and long term effectiveness of intervention. Limitation: Their intention was to estimate effectiveness of educational interventions, so they limited their review to RCTs, CCTs, interrupted time- series, and controlled before-after study designs. Information pertaining to 'why and intervention may work' remain unknown. The relatively small sample sizes, narrowness of populations examined, and self-selection of participants in many studies also limits	Strength: Identified that different levels of education have different understanding of research. Limitation: Identified future research should continue to focus on the perceptions that affect the conduct and utilization of research in different organizational systems. Past research has been focused on the global state of nursing research and the barriers that affect it using general nursing practice groups or nursing organizations.

	has emerged up to now to indicate that the picture has changed.	demonstrated. Before adoption elsewhere it will be important to review the cultural appropriateness and content validity of items in the different sections of the questionnaire as different barriers to evidence-based practice may be important in some countries.	the strengths of conclusions.	
Funding Source #9-12	None noted	Funding was obtained but no source listed.	None noted	None noted
Comments #9-12	This article has several good strategies to enhance the use of EBP in practice that are being considered for my project. Make clinical staff more aware of existing research in their specialty areas and undertake joint research projects with clinical staff were the top 2 that had high results.	This article gives a good background of EBP and *The Developing Evidence-Based Practice questionnaire* can assist in assessing the specific 'evidencing' tendencies of any given group of nurses. This can also be used to follow up to see if evidence continues to be used.	Educational interventions where somewhat affective for the short term but may erode over time in the physician medical student population.	Supports nursing practice should be based on evidence. They used the Research Utilization Questionnaire that was updated. This adds good comparison data for my population of ADN nurses. Their questionnaire asks if other disciplines added to their use of evidence. It also addresses the need to support ADN and Diploma nurses to understand and use evidence.
Systematic Review Evidence Table Format [adapted with permission from Thompson, C. (2011). Sample evidence table format for a systematic review. In J. Houser & K. S. Oman (Eds.), Evidence-based practice: An implementation guide for healthcare organizations (p. 155). Sudbury, MA: Jones and Bartlett.]				
Article Title and Journal #13-16	13. Nurses reclaiming ownership of their practice: implementation of an evidence-based practice model and process. *Journal of Continuing Education in Nursing, 39* (4),	14. Nurses' Skill Level and Access to Evidence-Based Practice, *The Journal of nursing administration,38* (11), 494-503.	15. Nursing best practice statements: an exploration of their implementation in clinical practice. *Journal Of Clinical Nursing, 14* (9), 1048-58.	16. Nurses' perceptions of evidence-based nursing practice. *Journal of Advanced Nursing, 62* (2), 209-215.

	166-72.			
Author/Year #13-16	Reavy, K. and Tavernier, S., (2008).	Cadmus, E., Van Wynen, E., Chamberlain, B., Steingall, P., Kilgallen, M., Holly, C., Gallagher-Ford, L., (2008).	Ring N, Malcolm C., Coull A., Murphy-Black T., Watterson A., (2005).	Koehn, M., Lehman, K., (2008).
Database and Keywords #13-16	CINAHL with Full Text; evidence-based, nursing, hospital	CINAHL with Full Text; Continuing competence, nursing, hospital	Medline, CINAHL with Full Text; evidence-based practice, best practice	Medline, CINAHL with Full Text; associate nurse and evidence
Research Design #13-16	Qualitative survey after implementation Descriptive study	Descriptive, exploratory survey, qualitative	Descriptive study	A descriptive study
Level of Evidence (Houser and Oman, p 203) #13-16	Level IV	Level IV	Level IV	Level IV
Study Aim/Purpose #13-16	This article describes a new theoretical model designed to guide change for evidence-based clinical nursing practice.	To assess NJ nurses' perceptions of their skills in obtaining evidence and access to information as well as to identify any barriers to practicing in an evidence-based manner.	To explore implementation of the first five Best Practice Statements (BPS) from the perspective of nurses involved in their development.	A study to investigate Registered Nurses' perceptions, attitudes and knowledge/skills associated with EBP.
Population Studied/Sample Size/Criteria/ Power #13-16	Staff nurses	Acute care hospital nurses as either a paper or electronic version between December 1, 2006, and January 5, 2007; geographic-stratified random sample of 3,000 RNs with a return of 987 respondents for a return rate of 37%.	nurses, (n = 15)	Registered in a large medical center in the United States of America Nurses/n = 1031
Methods/Study	Synthesis of answers	The online version	Semi-structured	A descriptive, cross-

Appraisal/ Synthesis Methods #13-16	from questionnaire.	was administered through SurveyMonkey.com	interviews of a purposive sample of nurses (n=15) were undertaken. Content analysis was used to identify themes emerging from the interview data.	sectional survey design using a psychometrically-validated measure of EBP. Surveys
Primary Outcome Measures and Results #13-16	The staff nurse is a central component of EBP. • EBP is a process for staff nurses to validate their practice. • EBP is a process for individual and collective voices to be heard. • EBP incorporates the process of change into the culture of the staff nurse. • EBP experiences increase critical thinking in making clinical decisions.	The clinical nurses' ability to engage in any research activity was limited. Two of the 3 top institutional barriers focused on the allocation and acquisition of resources. The other barrier was the presence of other goals with higher priorities. Individual barriers included lack of skills to critique or synthesize research, lack of understanding pertaining to databases, and difficulty accessing research materials.	Four main themes emerged from analysis of transcripts: variations in use of the BPS; benefits to patients; benefits to practitioners; and, barriers and drivers to use. Amongst participants, personal users adopted the statements in their own practice but enablers also actively encouraged others to use the statements. Whether participants acted as enablers depended on individual, team and organizational factors. The ability of participants to act as leaders was influential in determining their ability both to facilitate local implementation and to encourage others to regard the BPS as a priority for implementation.	Participants had moderate scores on practice and attitudes towards EBP. The knowledge/skills mean scores were somewhat lower. Statistically significant differences were found for attitudes between those with baccalaureate and higher education compared to those with associate and diploma education. The two most cited barriers to implementing EBP were time and knowledge.
Author Conclusions/ Implications of Key Findings #13-16	Gains related to the increased involvement of staff nurses in EBP projects included increased use of best evidence for patient care, increased opportunities for leadership by staff	Gaps still exist in RNs' computer andsearching skills and availability to access EBP information and ''best practices.'' Administrators, educators, clinicians, librarians,and	This exploratory study highlighted examples of patients and practitioners benefiting from the BPS. Such findings suggest these statements could become a useful tool in promoting EBN	The findings suggest the value of a methodical assessment when developing a systematic plan for implementing an institutional culture of evidence-based practice.

	nurses, improvedcritical thinking skills, and improved communication skills. Providing opportunities to use this evidence-based practice model and process will help to maintain staff nurses' enthusiasm for their profession.	schools of nursing faculty could all benefit from the results of this study. It is suggested that nurse executives evaluate their individual hospitals and implement change as it relates to EBP.	practice. However, implementation of the BPS varied between participants and their organizations. Nurses who were most effective in promoting local implementation of the BPS adopted facilitator and leadership roles within their organizations.	
Strengths/ Limitations #13-16	Strength: Showed nurses enjoyed being part of the process. Communication that flows in all directions is an important factor. Limitation: Some staff initially chose to participate then backed out.	Strength: Identified as age of RN increases, computer skill level decreased. Also identified nurses primarily obtain information from their peers; secondarily they use the internet. Supports teaching access to databases. Suggested taking the library to the nurse. Limitation: The instrument was repetitious, and based on feedback from the participants; it forced choices where some participants would have responded differently had they had more choices.	Strength: Supported leadership has a part in EBP being used. Also supported multi-disciplinary groups to build guidelines. Limitation: Further research is required to investigate BPS implementation from the perspective of mainstream practitioners. The study was dependent on participants self-reporting their experience of BPS implementation, and this has the potential for bias from those wanting to portray themselves in a positive light.	Strength: The testing of the Clinical Effectiveness and Evidence-Based Practice Questionnaire suggests that further evaluation and possible revision are needed. Education and organizational context, including lack of time, cost, the availability of nurses with research knowledge, and leader support were important factors in translating research into practice and evaluating clinical effectiveness. Limitation: It was limited by use of a convenience sample and survey method of data collection. The response was lower than a desired rate of at least 65%, the 40.9% rate falls within the norm (Polit & Beck 2008). The findings may not have represented the population and may be biased towards nurses who feel somewhat

				confident in their EBP knowledge and skills. The medical center of study had recently begun its pursuit of Magnet status. Thus, nurses may have been more aware of the need for an organizational cultural shift that includes EBP. This may have skewed the results to depict more favorable outlooks on EBP. The sample included a higher proportion of BSN-prepared nurses in the sample, which may have also had an effect on the findings. Finally, the Clinical The Evidence-Based Practice Questionnaire (Upton & Upton 2006) was quite new and needed further testing.
Funding Source	None noted	Association staff and librarians; Demeter, M., statistician; Pravikoff, D.; and AONE Institute of Research for their seed grant sponsored by Cerner 2006.	This evaluation was funded by the NHS Quality Improvement Scotland.	None noted
Comments #13-16	This is a description of a process model to implement EBP in a clinical setting. It is made up of the Iowa model, Settler's model and Rosswurm and Larrabee's model. There are good points to emphasize about EBP	This was a state wide study of nurse's skill in the use of evidence in their practice. Barriers are listed for EBP that I will be able to compare to my survey. There is support for an educational program to increase use of	Using BPS is a strategy in encouraging nurses to use evidence-based practices and maybe a strategy chosen for my capstone project.	This reinforces that knowledge and skill of EBP are correlated. Education affects its use and supports that if a nurse has a positive attitude about EBP they are more likely to look for and use it. It supports nurses do

		evidence. Support for nurses required to practice using evidence.		not have the knowledge and support to look for, appraise and use evidence.
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Article Title and Journal #17-20	17. Organizational infrastructures to promote evidence based nursing practice. *Cochrane Database of Systematic Reviews*, (3).	18. Preparing the Nursing Workforce of the Future. *International Journal of Mental Health Nursing, 18* (5), 349-56.	19. Promoting Evidence-Based Practice: An Internship for Staff Nurses. *Worldviews on Evidence-Based Nursing, 1* (4), 215-223.	20. Providing direct care nurses research and evidence-based practice information: an essential component of nursing leadership. *Journal of Nursing Management, 18* (1), 84-89.
Author/Year #17-20	Foxcroft, D., Cole N., (2009).	Ellenbecker C., (2009).	Cullen, L., Titler, M., (2004).	Staffileno, B., Carlson, E., (2010).
Database and Keywords #17-20	The Cochrane Database of Systematic Reviews; Evidence-based, nursing, and process	CINAHL with full text; Associate, evidence, nurse	CINAHL with Full Text; Evidence-based practice	CINAHL with full text; Evidence-Based; Bedside
Research Design #17-20	Cochrane Review	Descriptive study	Interventional study, Descriptive	Qualitative evaluations, Expert Opinion from a successful program.
Level of Evidence #17-20	Level I	Level IV	Level IV	Level IV
Study Aim/Purpose #17-20	To identify and summarize rigorous evaluations of organizational infrastructure developments aimed at promoting evidence based nursing practice.	The aim of this article was to describe the historical development of nursing education, the types and numbers of nurses currently in the workforce, and the need for educating nurses solely at the baccalaureate and graduate level and for immediate implementation of the baccalaureate degree for entry into professional nursing practice.	This article describes an internship, program evaluation, and outcomes achieved through the internship.	This commentary describes the reasons, strategies and benefits of providing direct care nurses with research and EBP education.
Population	Randomized	Nursing students,	A minimum of 2	Nurses who attended

Studied/Sample Size/Criteria/ Power #17-20	controlled trials, controlled clinical trials and interrupted times series studies of an entire or identified component of an organizational infrastructure development aimed at promoting effective nursing interventions. The participants were health care organizations comprising nurses, midwives and health visitors in hospital and community settings.	faculty, and nurses currently in the workforce, No specific number given.	years of nursing experience At least 1 year tenure on the current clinical area Interest in learning about use of research and other evidence in practice partnership among staff nurse, the nurse manager, and an advanced practice nurse Leadership skills—informal leader among peers Distinguished clinical performance.	educational activities
Methods/Study Appraisal/ Synthesis Methods #17-20	They searched: The Cochrane Library, Medline, EMBASE, CINAHL, SIGLE, Healthline, National Research Register, Nuffield Database of Health Outcomes, NIH Databases up to August 2002. They hand searched the Journal of Advanced Nursing, Applied Nursing Research and Journal of Nursing Administration (to 1999), and they checked the reference lists of articles obtained. They also contacted experts in the field and relevant Internet groups.	Review of literature	Evaluation of program	The research and EBP education programs were evaluated qualitatively, as well as by the number of research/EBP projects implemented.
Primary Outcome Measures and Results #17-20	There was a lack of sufficient quality of many studies to be included in the systematic review. Leading to no clear implications for	The multiple educational paths to nursing practice limit the development of professionalism in nursing, perpetuate	Interns report understanding the process, appreciate the opportunity for professional growth, and report their objectives are being	Course evaluations have been positive. Participant commentary indicates that our programs have been an educational and

	organizational practice using the impact of organizational infrastructures on the development of EBN practice.	the current situation of nurse shortages, and result in a workforce unprepared to meet the challenges of the future. Baccalaureate prepared nurses are essential to assuring patient access to safe and effective health care.	met. Participants evaluated the program very positively and also provided recommendations for revision (e.g., revising class content). The program resulted in improved quality of care such as increased patient and family satisfaction, decreased length of stay, and cost savings.	rewarding experience that will benefit the hospital and nurses involved.
Author Conclusions/ Implications of Key Findings #17-20	There are no clear implications for organizational practice as there is no good evidence about the impact of organizational infrastructures on	The possibility of legislating baccalaureate education as entry level for nursing practice is greater now than in the past because of a confluence of several events: the recent nursing shortage and the failure of past approaches to shortages to provide the needed nursing workforce; the changing demographics in the United States with projections of increased demand for health care providers; the enactment of health care reform legislation, requiring new approaches to delivery of health care; and nurse leaders and other policy experts calling for changes in nursing education.	The internship provides a process to address practice questions through implementing, evaluating, and integrating practice changes. While EBP may not be for the "faint of heart," programs like this EBP staff nurse internship provide support for those nurses who want to improve patient outcomes and accept the challenge of creating a positive change.	Direct care nurses, who participated in their program, demonstrated a strong desire to learn about research and EBP so they could practice using evidence-based care with confidence, thus transitioning from a 'tradition-based' care approach to an evidence-based way of providing care as the standard for nursing practice. Implications for Nursing Management Providing a dedicated time for additional education sends a clear message that research and EBP are important elements embedded in patient care.
Strengths/	Strength: Studied	Strength: This	Strength: Nurses	Strength: Showed

Limitations #17-20	organizational infrastructures specific to nursing Limitation: No studies were sufficiently rigorous to be included in this systematic review. Seven case study evaluations were identified but excluded from the review because of poor design and lack of controls.	article provides the potential for strengthening and elevating the profession, and positioning nursing as an attractive first choice career. Limitation: The work some states have begun, such as legislation to expand nursing workforce, establishing Nursing Workforce Centers, and developing mechanisms to collect valid and reliable data on workforce, should be expanded to all states. On the federal level, money for nurse education (Title VIII) will need to be targeted to baccalaureate and graduate nurse education.	were successful in applying EBP training to a clinically relevant project. Showed an increase in patient satisfaction and a decrease in costs. Limitation: Benefits to the institution include improving care and cost avoidance. Improvements in patient care have resulted in improved patient and family satisfaction, decreased length of stay and costs, and reduced anxiety. Evaluation at the completion of the interactive classroom days indicated that what the staff nurses needed most was time to complete their project.	increase knowledge in EBP. Potential benefits include an opportunity for intellectual stimulation, professional development, greater job satisfaction and delivering high-quality patient care. A decrease in length-of-stay hospital-associated complications. In addition, evidence-based organizations provide benefits for professional nursing practice, improving recruitment and retention of nursing staff. Limitation: More studies need to be done to quantitatively evaluate patient outcomes and cost reductions.
Funding Source #17-20	None noted	The work for the article was done during a Fellowship at the Center to Champion Nursing in America at AARP.	None noted	None noted
Comments #17-20	A review of studies showing there has not been enough study to show what organizational infrastructural intervention is effective in promoting evidence based nursing practice. More research on associating interventions with a process is needed.	This article gives good statistics for the different entry levels of education in nursing and the increased need for higher education with healthcare reform.	This article described an internship approach to implementing EBP to the organization. It was affective but time consuming. They showed an increase in Patient Satisfaction scores and showed the cost of education was countered by cost avoidance.	This article gives strategies for & against implementing EBP. It gives the arguments against implementing education for EBP. There is an outline of education that they use. This could be very helpful in designing my educational program.

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Article Title and Journal #21-24	21. Readiness of U.S. Nurses for Evidence-based practice. *American Journal of Nursing, 105* (9), 40-51.	22. Reading Nursing Research: Easy as ABCD. *Journal of School Nursing, 19*(6), 326-329.	23. Research for practice. Nurse knowledge, skills, and attitudes related to evidence-based practice: before and after organizational supports, *Med Surg Nursing*, 17 (1), 55-60	24. Strengthening organizations to implement evidence-based clinical practices. *Health Care Management Review, 35* (3), 235-45.
Author/Year #21-24	Pravikoff, D., Tanner, A., Pierce, S., (2005).	Frame, K., (2003).	Munroe, D., Duffy P., Fisher, C., (2008).	Lukas C. Engle R., Holmes S., Parker V., Petzel R., Seibert M., Shwartz M., Sullivan J., (2010).
Database and Keywords #21-24	Academic Search Premier; evidence-based nursing	CINAHL with full text; evidence-based practice	CINAHL with full text; continuing competence, nursing, hospital	CINAHL with Full Text
Research Design #21-24	Descriptive, exploratory survey	Descriptive study	Quasi-experimental design	Mixed-methods longitudinal comparative case study design
Level of Evidence #21-24	Level IV	Level IV	Level III C	Level III B
Study Aim/Purpose #21-24	To examine nurses' perceptions of their skills in obtaining evidence and their access to tools with which to do so.	The focus of this article is to provide a clear framework that school nurses can use when reading and evaluating research.	The purpose of this study was to assess and enhance the knowledge, skills, and attitudes of nursing personnel in a rural hospital setting related to EBP before and after implementation of organizational supports.	This project's aim was to deepen that understanding by implementing and evaluating an organizational model hypothesized to strengthen the ability of health care organizations to facilitate EBPs.
Population Studied/Sample Size/Criteria/ Power #21-24	Geographically stratified random sample of 3,000 U.S. RNs, whose names were generated from a list of more than 2 million RNs nationwide. 760 Clinical RNs responded	Student nurses/Sample size not stated	200 nurses	Participating medical centers were varied, ranging from large urban highly-affiliated tertiary facilities to small medical centers in rural areas; six were acute inpatient facilities and one was primarily a long-term care facility.

Methods/Study Appraisal/ Synthesis Methods #21-24	93 item questionnaire that was modified. Content validity was established by experts in nursing, nursing informatics, and information science.	This study reviewed the literature for research studies describing how to read research.	A pretest/posttest design to answer the research questions employing a survey instrument developed for a previous study (Lash, Munroe, & Schultz, 2003).	The study is a mixed-methods longitudinal comparative case study based on a 3-year intervention in which one VA network implemented the organizational model in support of redesign efforts to improve hand-hygiene practices, the designated EBP.
Primary Outcome Measures and Results #21-24	The typical respondent was 40-49 year old white woman who worked in a hospital, held a diploma or associate's degree in nursing. 62% said they seek information to support their everyday practice at least once a week or several times a week. 67% said they always or frequently sought information from a colleague. Journal articles, research reports, and hospital libraries were seldom used for information. Fewer than half were familiar with EBP term. Barriers with listed in order of importance with lack of value for research in practice #1, Lack of understanding of organization or structure of electronic databases #2 and difficulty accessing research	Demonstrated using the ABCD method to evaluate research was a valuable tool.	The pretest showed, confidence related to developing clinical practice questions was high for 46% of respondents. Confidence was reported (53%) in their ability to conduct literature searches for evidence to answer clinical practice questions. No significant differences existed related to education or position for these two variables. Posttest findings showed an increase in confidence in the formulation of research questions (from 46%-60%) and searching the literature (from 53%-60%). The changes were not statistically significant, At post-test, nurse leaders reported significantly higher levels of confidence in developing clinical practice	Fidelity ratings were used to analyze the extent of organizational model implementation from two perspectives. Analyses support the hypothesis that greater fidelity to the organizational model was associated with higher compliance with hand-hygiene guidelines. High-fidelity sites showed larger effect sizes for improvement in hand-hygiene compliance than lower-fidelity sites. Adherence to the organizational model was in turn affected by factors in three categories: urgency to improve, organizational environment, and improvement climate.

	materials #3		questions from pretest. Nurse leaders also demonstrated greater confidence in this skill than staff nurses at posttest.	
Author Conclusions/ Implications of Key Findings #21-24	Nurses are not ready for evidence-based practice in the U.S. Clinicians must recognize the gaps in their own information retrieval and evaluation of skills, look for and obtain continuing education that enhances the relevant skill sets, demand greater access to high-quality information resources in the workplace, demonstrate a commitment to using information resources effectively to improve care, and set goals for integrating EBP.	The author concluded that if school nurses have straightforward method to evaluate nursing research they would be more likely to use it.	Results of this study are useful to nurse administrators in rural settings, where resources for EBP support may be limited. Findings reflect the benefits of several types of organizational support strategies for EBP and suggest that nurse leaders are in a position. Findings also validate those of Olade (2004) and others that the presence of a nurse researcher can be an effective way to keep nurses focused upon EBP in their daily practice.	Analyses support the hypothesis that greater fidelity to the organizational model was associated with higher compliance with hand-hygiene guidelines. High-fidelity sites showed larger effect sizes for improvement in hand-hygiene compliance than lower-fidelity sites. Adherence to the organizational model was in turn affected by factors in three categories: urgency to improve, organizational environment, and improvement climate.
Strengths/ Limitations #21-24	Strength: Identified that nursing is not ready for EBP because of many barriers with one being technology changing rapidly. Limitation: None noted.	Strength: It supports school nurses using evidence in their practices and school nurse training focusing on how to use it. Limitation: One expert's limited review of the literature and opinion on how to review research.	Strength: Study demonstrated it was more cost effective to train nurses on EBP than to hire a staff person to guide them. Limitation: This small sample had a low response rate.	Strength: Supported high fidelity vs. low fidelity simulation. Showed active leadership commitment, engaged staff, links to tools to change practice. Limitation: Data was collected, but it varied in terms of the observer and in the number and frequency of observations.
Funding Source #21-24	The expert panel on Nursing Informatics of the American Academy of Nursing; the	None noted	None noted	None noted

	American Medical Informatics Association's Nursing Informatics Working Group; CINAHL Information Systems; the Interagency Council on Information Resources for Nursing; McKesson Corporation; and Skyscape, Inc.			
Comments #21-24	This article has an instrument that many other instruments are based off of. It is original research that supports the work of my capstone project	Using the Abstract; Bar graphs and tables; Content/Conclusion; Design of methods to evaluate research is a framework choice for my capstone project. This could be one of the tools used for the bedside nurse.	The article included a verified tool to assess evidence-based practice by nurses and several good interventions to support evidence-based practice. Distinguishes between ADN and other nursing degrees.	This article used hand-hygiene as an example for how this organization used the Organizational transformation model (OTM) developed in the evaluation of the Robert Wood Johnson Foundation's Pursuing Perfection initiative to implement evidence. It is a model that can be used for my capstone project.
Systematic Review Evidence Table Format [adapted with permission from Thompson, C. (2011). Sample evidence table format for a systematic review. In J. Houser & K. S. Oman (Eds.), Evidence-based practice: An implementation guide for healthcare organizations (p. 155). Sudbury, MA: Jones and Bartlett.]				
Article Title and Journal #25-28	25. The Evidence-Based Practice Beliefs and Implementation Scales: psychometric properties of two new instruments. *Worldviews Evidence-based Nursing, (2009),* *6*(1):49.Retrieved from CINAHL with full text Database.	26. The intersection of the history of associate degree nursing and "BSN in 10": Three visible paths. *Teaching and Learning in Nursing 5* (1), 39-43.	27. The missing link: information literacy and evidence-based practice as a new challenge for nurse educators. *Nursing Education Perspectives, 27* (6), 320-323.	28. The Slippery Slope Differentiating Between Quality Improvement and Research. *The Journal of Nursing Administration, 36* (4), 211-219.
Author/Year #25-28	Melnyk, M., Fineout-Overholt, E., and Mays, M.,	Matthias, A., (2010).	Courey T., Benson-Soros J., Deemer K., Zeller R., (2006).	Newhouse, R., Pettit, J., Poe, S., Rocco, L., (2006).

	(2009).			
Database and Keywords #25-28	CINAHL with Full Text; EBP and instrument	CINAHL with Full Text; ADN, history	CINAHL with Full Text; Associate nurse and evidence	CINAHL with full text; evidence-based practice
Research Design #25-28	Study of two instruments.	Historical Study	Quasi-experimental design	Systematic Review of descriptive studies
Level of Evidence #25-28	Level III C	Level IV	Level III C	Level IV
Study Aim/Purpose #25-28	The aim of the study was to report on the development and psychometric properties of new versions of the EBP Beliefs and Implementation scales.	This article summarizes the benefits and barriers to the implementation of differentiated nursing practice by educational preparation.	To educate nurses to apply current research outcomes to nursing practice, an information literacy program was designed and implemented.	The purpose of this article was to differentiate between research and quality improvement, explore the potential risks of confusing quality improvement with research, and suggest criteria by which to determine the difference.
Population Studied/Sample Size/Criteria/ Power #25-28	Nurses attending continuing education classes. N=394	ADN nurses	Associate degree nursing students first-semester associate degree nursing students in conjunction with a foundations in nursing course /n=58/	Hospitalized patients
Methods/Study Appraisal/ Synthesis Methods #25-28	Data from the two scales were analyzed to evaluate reliability and validity.	Historical Study	Questionnaire/Scales were constructed for each of the two dimensions at both time points. Cronbach's alpha reliability estimates for these scales ranged from .798 to .886. A control group and treatment group were tested. ANOVA was used.	Synthesis of research
Primary Outcome Measures and Results #25-28	Cronbach’s alpha was >.90 for each scale. As educational level increased beliefs and implementation skills increased and as responsibility of the workplace	“BSN in 10” legislative proposals mandate advancement of a diploma and ADN nurses' education to the BSN undergraduate level withinn10 years of	Respondents showed a higher level of Access after instruction than before. The information literacy program resulted in a less positive attitude toward the	There are 3 factors that help distinguish QI and research. The first factor is the intent of the investigator as defined by the expressed purpose of the proposed

	increased.	obtaining initial RN licensure. The legislative proposals extend support to the continuation of diploma and ADN education as a means to enter the profession of nursing.	need for nursing students to stay current in the literature.	project, specifying who may benefit from the project. The purpose of research is to generate knowledge that may have broad application. In contrast, the purpose of QI is to improve care processes within a specific unit or organization. Quality improvement is a management tool.
Author Conclusions/ Implications of Key Findings #25-28	Reported reliability and validity of the EBP Beliefs and Implementation Scales in a heterogeneous sample of practicing nurses.	The “BSN in 10” legislative proposals stimulatequestions regarding the current identity and placement of associate degree nursing within nursing practice. Studying the history of associate degree nursing can be helpful when choosing which path the ADN community and supporters might follow.	Data analysis revealed that the information literacy program had both a positive effect on students' literacy skills and a negative effect on their attitudes toward the need for using these skills in nursing practice.	The consequences of misrepresenting QI as nursing research result in poorly designed and interpreted studies, potential for lack of consideration of subject rights and IRB or other regulatory sanctions for noncompliance with federal, state, and local law and institutional policies.
Strengths/ Limitations #25-28	Strength: Supported the use of the instrument to measure EBP beliefs and implementation skills. Limitation: Test retest reliability was not measured, so the instruments’ stability is unknown. Cross-validation and longitudinal studies are needed to To further validate the scales	Strength: Supports entry into nursing as a BSN degree. Limitation: It may also illuminate an unknown path not identified in this article. The process of historical dialogue has the potential to allow full visualization of all paths, and continued historical study may bring forth a solution to the questions regarding ADN practice. Further	Strength: Identifies gaps in educating EBP guidelines. Limitation: Alternatives need to be explored that will result in nurses obtaining the technical skills necessary for information literacy and developing positive attitudes toward basing professional nursing practice on current research.	Strength: Identified the difference between Quality improvement studies and research especially when it needs to go through an IRB process. Limitation: It is a descriptive review of the literature.

		dialogue and study will assist in the decision of how to approach the "BSN in 10" legislative proposals.		
Funding Source #25-28	None noted	None noted	None noted	None noted
Comments #25-28	This article provides the validation studies for the EBP Beliefs and Implementation Scales to be used with the project educational intervention	This article adds the perspective of the history of the ADN nurse and where legislation is being developed to transform the path of this degree.	This article studies student nurses before and after they institute a literacy program to develop skills and attitudes for use of EBP. Includes a Student Questionnaire called E*mpowering Nursing Students to Navigate Through Professional Nursing Literature and Websites*	This article identifies the differences between quality assurance and evidence-based research. There needs to be a distinction between these to be a Magnet hospital. This can be added as a piece of the education I will do for my project.
Systematic Review Evidence Table Format [adapted with permission from Thompson, C. (2011). Sample evidence table format for a systematic review. In J. Houser & K. S. Oman (Eds.), Evidence-based practice: An implementation guide for healthcare organizations (p. 155). Sudbury, MA: Jones and Bartlett.]				
Article Title and Journal #29-32	29. The systematic review of literature: Synthesizing evidence for practice. *Journal for Specialists in Pediatric Nursing, 16* (1), 64-9.	30. Teaching Research and Evidence-Based Practice Using a Service-Learning Approach. *Journal of Nursing Education, 49* (12), 691-5.	31. Transforming health care from the inside out: Advancing evidence-based practice in the 21st century. *Journal of Professional Nursing, 21*(6), 335–344.	
Author/Year #29-32	Rew, L., (2011).	Balakas, Sparks, L., (2010).	Fineout-Overholt, E., Mazurek, B., and Schultz, A., (2005).	
Database and Keywords #29-32	CINAHL with full text; evidence-based practice	CINAHL with full text; evidence-based practice and teaching intervention	CINAHL with full text Database; Evidence-based practice	
Research Design #29-32	Descriptive	Qualitative and quantitative descriptive study	Review of the literature	
Level of Evidence (Houser and Oman, p 203) #29-32	Level IV	Level IV	Level IV	
Study Aim/Purpose #29-32	The purpose of this paper was to describe the process	To connect research and EBP, the focus of a baccalaureate	The purpose of this article was to provide an overview	

	of conducting a systematic review of literature.	research course was changed from a traditional format to one of evidence appraisal and synthesis.	of EBP and offer recommendations for accelerating the adoption of EBP as a culture in education, practice, and research.	
Population Studied/Sample Size/Criteria/ Power #29-32	Pediatric nurses	Baccalaureate nursing students/75	None noted	
Methods/Study Appraisal/ Synthesis Methods #29-32	Description of the systematic review of the literature.	A survey addressing six key questions such as the value in hearing program managers discuss the individual topics and the extent to which the project increased their understanding of EBP. More than 85% of the students agreed with each of the survey items and indicated that working with a community partner to learn course content was indeed a meaningful experience. Comments were a valuable piece of the study.	Review of the literature	
Primary Outcome Measures and Results #29-32	Nurses who provide care for children and their families work in an environment that is constantly changing. They need to have a solid rationale for everything they do in this setting. Their practice needs to be based on evidence, utilizing SRs of the literature. Nurses providing care may not have time to find the evidence they need. Practicing	Students reported that they achieved all of the course outcomes and that the course structure promoted individual learning.	It was focused on emphasizing outcomes when using EBP.	

	nurses who have a basic understanding of the research process can recognize that a SR is another way to collect and analyze data that is directly related.			
Author Conclusions/ Implications of Key Findings #29-32	Defining attributes, rationale for, and steps in conducting systematic reviews are presented. Examples from published reviews on pediatric nursing are included. Practice Implications. Pediatric nurses may consult professionally prepared systematic reviews, such as The Cochrane Collection, or conduct their own reviews with the help of electronic search engines.	Courses taught from an EBP perspective can serve as the guide and incentive for students to incorporate EBP into their practice as a professional nurse. The student's thought the education was valuable.	Evidence-based practice has provided a process for changing practice to improve patient care. There are models, tools, and empirical support to assist clinicians in more easily living the EBP process in their environments; health care needs to be transformed from the inside out utilizing collaborative teams to join together with the common goal of advancing EBP in order to make gains.	
Strengths/ Limitations #29-32	Strength: Gives the value of using systematic reviews to get an overall picture of using a review of the literature. Limitation: None noted.	Strength: Working with a community partner to learn about EBP was meaningful. All course outcomes were promoted individual learning. Limitation: The worksheets and quizzes were valuable to the accelerated students as a review but felt they were called on to teach to much.	Strength: It linked EBP to improved patient outcomes. Limitations: None noted.	
Funding Source #29-32	None noted	The authors have no financial or proprietary interest in the materials presented.	Confirmed funding must be investigated to assess quality of research.	
Comments	I can use this article	This article can be	It supported using	

#29-32	to teach how to do a good literature search/review. It suggests using small groups to teach these concepts. This will be valuable to document how this is done.	used to reference baccalaureate education on EBP. They used an evidence-based design to develop a class to teach EBP principles that included service learning. Their strategies can be helpful in designing classes on EBP.	evidence to improve patient outcomes. It also provided a history of EBP. Both of these points will be used for the project. It gave a good synopsis of EBP models, and strategies for implementation.	

Appendix D: Market/Risk Analysis

	SWOT ANALYSIS for EBP Education at The Agency	
INTERNAL	**Strengths**	**Weaknesses**
	1. Uses the tools that are present at the agency such as the Computer Lab, subscription to online library, and forms. 2. DNP has worked at the hospital for 14 years and understands processes and barriers for EBP. 3. There is a demonstrated gap in knowledge. 4. Can be modified to meet the needs of the customer. 5. Focus of instructors' DNP education.	1. Managers have the ability to not approve staff attending education. 2. Nurses not wanting to give up time to take the education. 3. Barriers not fully addressed such as lack of management support, time to utilize EBP skills and budget support. 4. Nurses need practice to keep skills current. 5. Only 15 computers available in computer lab limiting the amount of nurses that can attend.
EXTERNAL	**Opportunities**	**Threats**
	1. Easier adoption of regulating body EBP initiatives that improve reimbursements. 2. Asked to present EBP information for poster and podium presentations. 3. State of Washington initiated in 2011 the requirement of continuing education for nursing recertification.	1. Census is high and nurses are needed on the units. 2. Competition with other educational opportunities. 3. Nurses go through education and then take a job at another facility. 4. Budget cuts to nursing continuing education.

Appendix E: Budget and Resources

Budget for Four Evidence-based Practice Classes

Instrument	**$100**
Supplies and Materials	**50**
HEAL-WA (WA State health professional online library) Or Cinahl with full text (Institutional license; 3 months @ $14,500/yr.)	**3,625**
Computer lab (provided by the institution)	**0**
Survey Monkey® subscription ($17 per month for 6 months)	**102**
Salary	
Curriculum Developer (40 hrs. at $60 per hr.)	**2,400**
Instructor (4 hrs. per class at $60 per hr.; four classes)	**960**
Gift cards for drawing at end of class	**100**
Total	**$7,362**

Appendix F: Logic Model

RESOURCES	ACTIVITIES	OUTPUTS	SHORT & LONG-TERM OUTCOMES	IMPACT
• Administration/Manager support • Classroom • Computer room • ADN volunteer to participate in project • Culture open to learning and changing practice • Purchase EBP belief scale and EBP Implementation scale from author (Melnyk, et al., 2009).	• Invitational letters and emails sent • Nurses sign up of EBP class • EBP belief scale and EBP Implementation scale baseline data gathered • Design EBP curriculum • Build EBP education curriculum • Journal Clubs offered after the EBP education to teach critical appraisal of literature skills and discuss integration into bedside care	• Goal of 45 ADN graduates sign up and complete the EBP education and surveys. • Participants demonstrate an increase in their beliefs and implementation skills after the educational intervention	• Participants sustain an improvement in their EBP beliefs and implementation skills four week after the educational intervention • Journal Club attendance increases • ADN's are questioning practice as evidenced by self-reflection • Spot audits demonstrate EBP initiatives are implemented	• Reportable patient outcome measures improve • Patient satisfaction scores increase • Nursing satisfaction scores increase

(W.K. Kellogg Foundation, 2004, p 54)

Appendix G: CITI Collaborative Institutional Training Initiative

Human Research Curriculum Completion Report
Printed on 6/5/2011

Learner: Margaret Orn (username: orn723)

Institution: Regis University

Contact Information

1010 Towne Rd NE
Bremerton, WA 98311 USA
Department: Nursing
Phone: 360-613-0220
Email: orn723@regis.edu

Social Behavioral Research Investigators and Key Personnel:
Stage 1. Basic Course Passed on 06/05/11 (Ref # 6129436)

Required Modules	Date Completed	
Introduction	6/5/2011	no quiz
History and Ethical Principles - SBR	6/5/2011	4/4 (100%)
The Regulations and The Social and Behavioral Sciences - SBR	6/5/2011	5/5 (100%)
Assessing Risk in Social and Behavioral Sciences - SBR	6/5/2011	5/5 (100%)
Informed Consent - SBR	6/5/2011	5/5 (100%)
Privacy and Confidentiality - SBR	6/5/2011	5/5 (100%)
Regis University	6/5/2011	no quiz

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI participating institution. Falsified information and unauthorized use of the CITI course site is unethical, and may be considered scientific misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Course Coordinator.

Appendix H: Facility Acceptance of Regis IRB Decision

harrisonmedical.org
360.744.3911

Date 9/14/11

IRB
Regis University
3333 Regis Blvd
Denver, CO 80221-1099

RE: Margaret Orn's Evidence-based Practice Gap in Knowledge Outcome Research Project

Dear Regis IRB,

The purpose of this letter is to confirm *Harrison Medical Centers'* participation in Evidence-based Practice Gap in Knowledge Outcomes Research Project that *Margaret Orn* will be carrying out in our institution. Further, *Harrison Medical Center*, accepts the review/judgment of the Regis IRB regarding the use of human subjects in this project.

Sincerely,

Patty Cochrell

Patty Cochrell
Executive Vice President &
Chief Operating Officer

Appendix I: IRB Acceptance Letter

REGIS UNIVERSITY

Academic Affairs
Academic Grants

3333 Regis Boulevard, H-4
Denver, Colorado 80221-1099

303-458-4206
303-964-3647 FAX
www.regis.edu

IRB – REGIS UNIVERSITY

September 22, 2011

Margaret Orn
1010 Towne Rd NE
Bremerton, WA 98311

RE: IRB #: 11-214

Dear Margaret:

Your application to the Regis IRB for your project "Evidence-based Practice Gap in Knowledge" was approved as exempt on September 22, 2011.

The designation of "exempt," means no further IRB review of this project, as it is currently designed, is needed.

If changes are made in the research plan that significantly alter the involvement of human subjects from that which was approved in the named application, the new research plan must be resubmitted to the Regis IRB for approval.

Sincerely,

Daniel Roysden, Ph.D.
Chair, Institutional Review Board

cc: Dr. Phyllis Graham-Dickerson

Appendix J: Evidence-Based Practice Beliefs Scale and Evidence-Based Practice Implementation Scale

Demographic profile:

Gender: Male, Female

Age: 21-30, 31-40, 41-50, 51-60, greater than 60 years old

Place of work: Progressive Care Unit, 2 Southeast/Respiratory/Stroke, Float Pool, 3 North/Medical, 2 South/Medical, 4 West/Medical Surgical, 3 West/Orthopedics, 2 West/Oncology, Intensive Care, Medical Imagining and Heart and Vascular Center, Harrison Health Partners, Emergency Department, Surgery, Labor and Delivery, Acute Care/Pediatrics, Other .

Race/ethnicity: White, Black, Asian, American Indian/Alaskan Native, Native Hawaiian or other Pacific Islander, Hispanic/Latino, or two or more races

Years worked in nursing: <5, 6-10, 11-15, 16-20, 21-25, 26-30, > 30

Prior education in EBP: Yes, No

Shift: Eight hour days, eight hour evenings, eight hour nights, twelve hour days, twelve hour nights, rotating shifts

Professional membership: Yes, No

EBPB Scale

The EBPB scale has a 5 point Likert-scale that ranges from 1 (strongly disagree) to 5 (strongly agree) (Melnyk,et al., 2009). The questions include:

1. I believe that EBP results in the best care for patients.
2. I am clear about the steps of EBP.
3. I am sure that I can implement EBP.
4. I believe that critically appraising evidence is an important step in the EBP process.
5. I am sure that evidence-based guidelines can improve clinical care.
6. I believe that I can search for the best evidence to answer public health practice questions in a time efficient way.
7. I believe that I can overcome barriers in implementing EBP.
8. I believe that I can search for the best evidence to answer public health practice questions in a time efficient way.
9. I am sure that implementing EBP will improve the care that I deliver to my patients.

10. I am sure about how to measure the outcomes of public health services provided to patients.
11. I believe that EBP takes too much time.
12. I am sure that I can access the best resources in order to implement EBP.
13. I believe EBP is difficult.
14. I know how to implement EBP sufficiently enough to make practice changes.
15. I am confident about my ability to implement EBP where I work.
16. I believe the care that I deliver is evidence-based.

EBPI Scale

The EBPI has a 5 point frequency scale that asks how often the item has been performed in the last 8weeks. It ranges from 0 (0 times) to 4 (greater than 8 times) (Melnyk, et al., 2009). The questions include:

1. Used evidence to change my clinical practice.
2. Critically appraised evidence from a research study.
3. Generated a PICO question about my clinical practice.
4. Informally discussed evidence from a research study with a colleague.
5. Collected data on a patient problem.
6. Shared evidence from a study or studies in the form of a report or presentation to more than 2 colleagues.
7. Evaluated the outcomes of a practice change.
8. Shared an EBP guideline with a colleague.
9. Shared evidence from a research study with at patient/family member.
10. Shared evidence from a research study with a multi-disciplinary team member.
11. Read and critically appraised a clinical research study.
12. Accessed the Cochrane database of systematic reviews.
13. Accessed the National Guidelines Clearinghouse.
14. Used an EBP guideline or systematic review to change clinical practice where I work.
15. Evaluated a care initiative by collecting client outcome data.
16. Shared the outcome data collected with colleagues.
17. Changed practice based on patient outcome data.
18. Promoted the use of EBP to my colleagues.